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The Canadian Public Health Association: An Appreciation

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I HAD hoped, having in mind the extreme consideration which has been extended to me by the members of the Executive Committee, and others, that I might have been relieved of the responsibility of a presidential address, during my term of office as your presiding officer. During the many years that I served as Honorary Secretary of this Association, I have listened to innumerable presidential addresses. I have been impressed with the wide knowledge, vision and enthusiasm of my distinguished predecessors in office. With the hope that I might strike an original note, I even took time off to re-read some of these addresses. I am, however, compelled to admit that they have said everything—past, present and future—that there is to say about public health in this country. Under the circumstances, therefore, I am going to ask that you bear with me for a few minutes in a brief presentation, which I have presumed to entitle: "The Canadian Public Health Association—An Appreciation".

This organization had its beginning in 1910 and held its first annual conference in December of 1911, under extremely favourable auspices. The then Governor-General, Field Marshal, His Royal Highness the Duke of Connaught, formally expressed his interest in the objects of the Association. The Prime Minister of Canada, the Rt. Hon. Sir Robert L. Borden, also addressed the conference. Lord Strathcona was its financial sponsor. The President, Dr. T. A. Starkey, briefly outlined the purpose of the Association. I quote: "Our primary aim and object is the diffusion of sanitary knowledge."

Presidential address given at the thirty-eighth annual meeting of the Canadian Public Health Association, held in the King Edward Hotel, Toronto, June 12-14, 1950, in conjunction with the first meeting of the Ontario Public Health Association.

The Governor-General stated at that time, and again I quote: "Of the many subjects which are awaiting solution in Canada, none is so important, to my mind, as that of the health of its inhabitants, both adult and infant; it is a subject which affects every one of us individually, and we owe it to ourselves and to the rising generation to see that conditions are improved so far as lies within our power. Public health is a question which rises above all politics, and it is the duty of the whole nation to join in promoting the objects of the Association which is now gathered here." The Prime Minister forecast a conference of Provincial and Federal Governments to concern themselves with the pollution of public water supplies.

The Association continued to interest itself in doing those things that were of concern to health departments during the period of the First Great War. It pressed for such matters as more effective measures to control venereal disease; pasteurization of milk; the removal of the ban on oleomargarine; the establishment of a Federal Department of Health; and closer working relations between the Canadian Medical Association and the Canadian Public Health Association.

But there was some cooling off of the early enthusiasm, and during the twenties the Association found it difficult to hold together its membership. There were some whose attitude was skeptical and many whose interest was casual. The situation can best be typified by a statement contained in an editorial by the President of the Association, the Honourable Dr. W. F. Roberts, in 1922, which reads as follows:

"There seems to have been a doubt in the minds of some as to whether this organization had a field of usefulness to serve, intimating, possibly, that the one association, the American Public Health Association, might have succeeded better, inasmuch as this was a special branch of medicine, and that the Canadian public health population was too small for a separate organization. I take it, good arguments were forthcoming in favour of both ideas. But that now is a matter of history. The Canadian Public Health Association is here and, I feel we all sincerely believe, is here to stay.

"Already it has performed good service, and there remains yet much to be done. Its future usefulness largely depends on the cooperation, not only of those directly interested, but of medical men and women in general, for we all realize we are rapidly approaching the day when preventive rather than curative medicine must prevail. Therefore it behooves all that they become affiliated with an organization whose aims and objects are along these lines.

"It should be our object to make this institution so efficient and popular that it will be felt to be indispensable to our Canadian life."

Ways and means of securing financial support were sought. It was in those days that credit goes to those who refused to accept the oft-voiced view that this country was geographically unsuited to a continuance of a national voluntary organization.

During all of this time, the Public Health Journal, as it was then known, was a private enterprise. It had been purchased from its original sponsors by a group of Association members, some of whom are present today and who contributed personal funds to ensure its closer relationship with the Association. However, in 1928, in the City of Winnipeg, opportunity was extended to those who were favourably disposed towards the continued functioning of

the Association, to express not only their views but their willingness to carry part of the load necessary to ensure the organization's future.

In a sense, this meeting was the turning point in the affairs of the Association, and those who pledged their support at that time continued to extend it until the top of the long hill of adversity was in sight. But, speaking of hills, I sometimes wonder if our position is not in some small way comparable to that of Richard the First of England, who, after overcoming innumerable obstacles during the Third Crusade, and having reached the outskirts of Jerusalem, was credited with saying, when urged by his colleagues to climb the Mount of Olives to view the Holy City, that he who couldn't conquer Jerusalem had no right to view its glory. Or is my analogy far-fetched and, having reached our present position, is our path from here on merely one of steady progress under sustained enthusiasm, I wonder?

But I am wandering far from the implications of my so-called title. It was not my intent to comment on the achievements of the Canadian Public Health Association—others have done that; but I do wish to pay tribute to a few of those who have, without thought of reward, given unstintingly of their time and effort to ensure the success of this Association. (I believe that, as a result of thirty years of close contact with them, I am well equipped to draw the attention of this Association to the extent of their contribution.)

First—to George Porter, who has been a member of the Association from its beginning, and who was freer with financial help and unqualified support than with unsolicited advice; who, during the lean twenties, served for four years as President. His unfailing optimism had a gloom-chasing influence on those who were privileged to be associated with him.

To Gordon Bates, who for ten years edited the Journal, bedeviled those who had something to say about public health to put their thoughts on paper, and assured them of early publication in Canada's outstanding medium of professional and public education; who always believed that financial solvency for the Journal was just around the corner.

To the group at the School of Hygiene and Connaught Medical Research Laboratories, particularly Don Fraser and Neil McKinnon, who occasionally tried to lessen Dr. Porter's optimism and Dr. Bates' enthusiasm with a dash of realism, while at the same time working ungrudgingly at the editorial page or writing letters to the Editor and Scotch jokes for the humour column.

To Bob Randall, who for eighteen years has done all of the things that were left undone by others and faithfully acted as rewrite man for the Secretary, the Treasurer, and the Journal contributors; who, during all this time, has steered the Association successfully through its annual and Sectional meetings.

And, lastly, to Dr. Bob Defries, who for thirty years has been the unshakable prop of this Association; who faced every crisis in its affairs with equanimity and unfailing faith in its future; who persuaded or importuned those who had a potential contribution to make, into agreeable acquiescence. His tact, thoughtfulness, idealism, and wholesome horror of personal kudos, inspire respect, admiration, and affection in all those who have been privileged to be among the executive officers of the Association.

And, finally, may I say that, by contrast, I have gained much and given little in my thirty years of official association with the Canadian Public Health Association.

Incidence of Cancer in Saskatchewan in 1948

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THERE has been very little interest shown in the literature on the incidence of cancer. One of the main reasons for this lack of information is undoubtedly the fact that reliable figures are extremely difficult to obtain in practice. In most regions cancer patients are first seen and treated in a variety of hospitals, clinics, and doctor's offices. In some cases records may be inconclusive or non-existent. MacDonald (1) has surveyed cancer cases in Connecticut over a twelve-year period. She reports a total incidence of 207.8 cases suffering from cancer for the first time per 100,000 population. Dorn (2) gives a figure of 230 new cases annually per 100,000 population. It is not clear whether he has excluded from this figure new cancers arising in patients who have previously had cancer.

It was thought that some useful purpose might be served by reporting as accurately as possible the total number of new cases occurring in a Canadian province during one year (1948). Saskatchewan has a more comprehensive cancer program than any other province or state on the North American continent, and full records are available on a large percentage of cases. There are two diagnostic and treatment cancer clinics in Saskatchewan but it is known that not all cancer patients are referred to them. Steps were taken to obtain as full data as possible on patients suffering from cancer who had not attended either clinic.

Collection of Material

The Saskatchewan Hospital Services Plan maintains complete records of admissions, discharges, and final diagnoses of all hospital patients in the province. From their files it was possible to collect a number of patients, who were subsequently individually verified by communications with their private physicians, and who had not been admitted to a clinic in 1948. Some patients, who had not paid their hospital tax, were covered by a special report which hospitals make on all cancer cases admitted. Reports were solicited and obtained from all the hospitals in the adjoining provinces—Manitoba and Alberta—on Saskatchewan residents who had been diagnosed as having cancer in 1948. In Saskatchewan it is compulsory by law for all tissue removed at an operation of any sort (with a few insignificant exceptions, such as tonsillectomy) to be sent to a provincial laboratory, of which there are two, for pathological examination. By examining these files a number of patients were found who had been treated in a doctor's office. Virtually all radiotherapy of malignant cases is performed by the cancer clinics in this province and the treatment of patients without biopsy in private practice is negligible.

Hospitals farther afield, e.g. in British Columbia and Minnesota, were canvassed, but with negligible results. All cases were checked to be sure that none had been counted twice. If, after exhaustive enquiry, a patient was thought by his physicians to be merely "suspicious of cancer" or "possibly cancer", then that patient was excluded.

If the diagnosis was made in any patient prior to 1948, that case was excluded. Only residents of Saskatchewan were considered. Undoubtedly some cases have escaped this survey. Some patients may have been diagnosed and treated while in some distant province or state; others certainly died without a diagnosis of cancer being made. Some may have been diagnosed, and no treatment considered advisable, in doctors' offices. Many of these latter cases would be covered by the Cancer Report form, which is supposed to be forwarded to the Saskatchewan Cancer Commission when a diagnosis of cancer is made, and the patient not referred to a clinic.

It is certain that there were more cases of cancer occurring in Saskatchewan residents in 1948 than are reported here. The same applies to all other published data. It is estimated that the number presented here is not more than 5 per cent low.

Population Surveyed

Saskatchewan had a population of 854,000 in 1948 (3). The community is predominantly agricultural, and males outnumber females, 453,000 to 400,700. The average age of inhabitants is lower than in other provinces, probably since people on retirement prefer a less rigorous climate.

The total number of new cases diagnosed during 1948 in Saskatchewan was 1,736. Of these, 56 cases represent new cancers developing in people who in a previous year had had a separate and distinct cancer. A number of patients (35) either developed a new cancer during the same year (1948) or presented originally with two cancers of separate organs. These 35 cases were counted as one malignancy only, and occurred only in the 1,420 new patients who were admitted to the clinics. The figure for Saskatchewan of patients suffering from cancer for the first time, excluding the 56 cases who had had cancer previous to 1948, but who developed another cancer in 1948, is therefore $1,736 - 56 = 1,680$. Of these cases, 260 were not admitted to a clinic. The incidence of multiple malignancies in these 260 cases is not known.

TABLE I
HOW THE DIAGNOSIS WAS MADE

	Microscopic Proved	Clinical	% Microscopic Proved	Total
Clinic patients....	1,175	301	80%	1,476
Others.....	176	84	68%	260
Total..	1,351	385	78%	1,736

The ultimate proof of malignancy, in the absence of an absolute method, rests on the pathologist—either by examination of biopsy material or by post-mortem examination. Even pathological "proof" is not final, as different

pathologists will frequently disagree when confronted with the same slides. In some cases pathological examination is not feasible, or may be contra-indicated for various reasons. In these cases, therefore, the clinical diagnosis, often based on x-ray findings, must be accepted.

This figure of 78 per cent cases pathologically proved compares favourably with the series of MacDonald (1) (74 per cent) and Dorn (2) (about 68 per cent).

Age Distribution

The present series is considered too small to show the age distribution in various diseases. It is large enough, however, to show the total incidence in various age groups with some accuracy (Table II). In 23 cases the age was not available.

TABLE II
AGE INCIDENCE

Age Group	Number
0 - 9.....	17
10 - 19.....	19
20 - 29.....	33
30 - 39.....	104
40 - 49.....	188
50 - 59.....	339
60 - 69.....	504
70 - 79.....	379
80 and over.....	135
Age unknown.....	23
Total....	1,736

Graph I shows the incidence per 100,000 population by age groups. In graph II these figures are corrected for the number of people living in each age

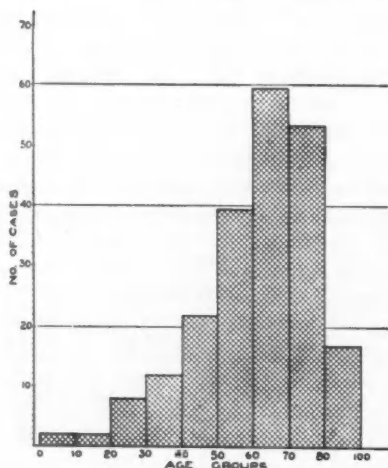


FIGURE I
Rate of Incidence for Malignant Cases by
Age per 100,000 Population.

group (3). The higher the age group, the greater the chance of contracting cancer.

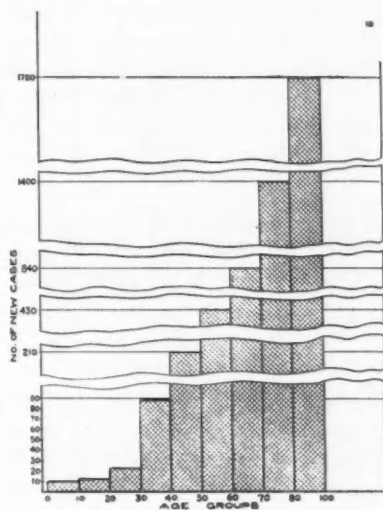


FIGURE II

Rate of Incidence for Malignant Cases in Specific Age Groups per 100,000 Population.

Distribution According to Site and Sex

It is difficult to compare these incidence rates (Table III) with those of Dorn (2) and MacDonald (1), since the grouping is somewhat different, but it is clear that the incidence of skin cancer is nearly 50 per cent more than Dorn's figures. The digestive system (stomach, bile passages, pancreas, large bowel and rectum) is less, but good agreement would be attained if some of the cases in "miscellaneous" were added. Many of these cases were cancer in the abdominal cavity—primary undisclosed. Cancer of the male genital tract (testis, penis, prostate) is the same in each case (26).

The most striking differences from other figures are in female genitalia, including the breast. The incidence in each case is very much higher in the figures of Dorn and MacDonald, and more than accounts for the lower incidence of cancer as a whole in Saskatchewan. Table IV illustrates this point. The significance is not clear.

The total incidence for 1948 per 100,000 population is 203 new cases. For males the incidence per 100,000 is 229, and for females 174 per 100,000.

CANCER DEATHS

It is contended that death rates, which are necessarily compiled from death certificates, are far less reliable than statisticians would like, or profess, to believe. The population of Saskatchewan has been relatively static over

TABLE III
DISTRIBUTION ACCORDING TO SITE AND SEX

Site	Males	Females	Microscopic Proof	No Microscopic Proof	Total	Incidence per 100,000 Population	
						Male	Female
Skin.....	241	154	357	38	395	53	38
Lip.....	149	1	144	6	150	33	..
Mouth and throat.....	15	4	18	1	19	3	1
Larynx and pharynx.....	9	2	8	3	11	2	..
Oesophagus.....	10	3	6	7	13	2	1
Stomach.....	145	51	87	109	196	32	13
Bile passages and liver.....	8	12	12	8	20	2	3
Pancreas.....	23	12	13	22	35	5	3
Large bowel (excluding rectum).....	46	41	62	25	87	10	10
Rectum.....	39	26	56	9	65	8	6
Breast.....	..	138	115	23	138	..	34
Corpus uteri.....	..	44	43	1	44	..	11
Cervix uteri.....	..	46	44	2	46	..	11
Vulva and vagina.....	..	3	3	..	3	..	1
Ovary.....	..	39	37	2	39	..	10
Testis and penis.....	7	..	7	..	7	2	..
Bladder.....	32	9	36	5	41	7	2
Kidney.....	21	12	16	17	33	5	3
Prostate.....	109	..	89	20	109	24	..
Bone.....	16	11	16	11	27	3	3
Lung.....	60	17	49	28	77	13	4
Eye and orbit.....	4	..	2	2	4	1	..
Brain.....	19	16	15	20	35	4	4
Thyroid.....	1	7	5	3	8	..	2
Hodgkin's disease.....	10	3	10	3	13	2	1
Leukaemia.....	31	19	50	..	50	7	5
Miscellaneous.....	41	30	51	20	71	9	7
Totals.....	1,036	700	1,351	385	1,736		

a good many years. Therefore the number of cancer deaths per annum should bear a fairly constant proportion to the number of new cases occurring each year. An examination of the reported cancer deaths from 1931 will show that this is not the case. According to official sources (4), the number of deaths in Canada of Saskatchewan residents was 857 in 1948, which is less than half the number of new cases occurring that year. If it is assumed that approximately the same number of cases occurred annually in the preceding years, then presumably more than half the people contracting cancer do not die from the disease. This, of course, does not mean that on the average more than 50 per cent of cases are being cured annually. It is merely a cynical commentary on the reliability of mortality figures and certainly does not lend weight to arguments such as those of McKinnon (5).

TABLE IV
INCIDENCE PER 100,000 FEMALES

	Female Genitalia	Breast	Total
Dorn.....	65.0	56	121
MacDonald.....	59.2	67.2	126.4
Saskatchewan, 1948...	33	34	67

The only way in which a true picture will be given of the survival rate in cancer, and of trends from year to year, particularly in the assessment of changing treatment policies, is by the employment of a controlled, continuous system of follow-up of all cancer patients from their diagnosis and treatment onwards. Far too little of this thorough follow-up system, which should be considered to be an integral part of treatment, is being carried out in Canada (and most other countries) today.

CONCLUSION

The figures submitted show an incidence of cancer of 203 new cases per 100,000 population for 1948 in Saskatchewan. This compares with 207.8 (MacDonald, 1) and 230 (Dorn, 2); however, a higher percentage of cases are pathologically proved in this series.

ACKNOWLEDGEMENTS

Thanks are due to the Saskatchewan Hospital Services Plan for valuable data supplied. Many hospitals and physicians, too numerous to mention, all supplied data on request. The pathologists in charge of the two provincial laboratories, Dr. J. W. Adams and Dr. N. B. G. McLetchie, graciously allowed a search of their files.

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A Survey of Cancer in Middlesex County, Ontario*

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THE recorded increase in the cancer death rate during the last twenty-five years has emphasized the importance of cancer as a medical problem. Cancer now ranks second as a cause of death at all ages—12 per cent of all male deaths and 15 per cent of all female deaths in Ontario are now assigned to cancer.

Improvement in the quality of medical certification and accuracy of diagnosis together with changes in the age structure of the population have all had a bearing on the recorded increase in cancer mortality. A large part of the recorded increase is due to changes in the age distribution of the population (1).

Accurate data on the incidence and prevalence of cancer in Ontario are not yet available. Mortality statistics do not answer essential questions on the incidence, prevalence and treatment of cancer, such as: What are the most frequent sites of cancer? How many people are there alive with cancer? Are there any significant geographic variations in the incidence of cancer? What are the sex variations in site incidence of cancer? Reliable morbidity statistics will provide an answer to such questions.

As a beginning, it was decided that a pilot survey of the incidence and prevalence of cancer should be made in a small but representative area in which the hospital facilities were adequate and medical services of a high order. This approach would serve not only to provide data for the area surveyed, but to test the method of investigation adopted.

SCOPE AND METHOD OF SURVEY

A pilot survey was conducted in Middlesex County in 1940 jointly by the Department of Health for Ontario and the Cancer Committee of the Ontario Medical Association with the full co-operation of the two local medical societies in the area. Middlesex County was selected as the pilot area for the survey because besides having a representative population and adequate hospital and medical services, it also had, centrally located, an active Institute of Radiotherapy.

*Analysis of the data was suspended during the War but was revived in 1947.

A survey report schedule was prepared by the Medical Statistics Branch of the Department of Health for Ontario and distributed by mail to all physicians and hospitals in Middlesex County by the Ontario Medical Association. This form (Appendix A) provided for name, address, age, sex, site and extent of disease, confirmation of diagnosis by biopsy, type of cancer, date of diagnosis, and date and condition of patient when last seen.

Reports were sought from all practising physicians and all hospitals in Middlesex County on all persons with cancer or probable cancer who had been seen, observed, or treated in private practice, hospital, or clinic during the calendar year 1939. Pathological laboratories were requested to provide a list of names and any relevant data of all persons for whom a specimen for biopsy was received. For the purpose of this survey leukaemia and Hodgkin's disease were included.

Analysis of the survey reports was made by the Medical Statistics Branch of the Department of Health for Ontario, using a marginally punched card. The Medical Statistics Branch arranged for a search of vital records and obtained information on all recorded deaths from cancer in Middlesex County during the survey year. All cases reported by physicians, hospitals, clinics, laboratories, and all cancer deaths recorded were cross-checked and duplications eliminated. All defective or incomplete reports were followed up by field visits.

Since the incidence and prevalence of cancer is not subject to fluctuations like infectious diseases, the report now presented will be a quite useful aid in current thinking on the cancer problem and in planning further studies in the future.

Limitations of the Data

The true number of persons with cancer is unknown; many malignant neoplasms originating in the internal organs remain undetected until late in the course of the disease; some are not diagnosed until death; a few are missed entirely. The incidence, prevalence and total cases of cancer in this study therefore relate to the number of known diagnosed cancer cases—as true a statement of the facts as we can presently secure.

Most doctors do not keep a cross-index of patients by diagnosis although most of them do have an alphabetical file. Many physicians did not have the time to leaf through their records and trusted to memory in making a report. The effect of this is believed to have been greatly reduced by checking laboratory reports and death certificates and by personal contact with physicians. In a few instances further information desired was not obtainable due to absence of the reporting doctors on active service.

Physicians residing just outside the County of Middlesex were not circularized. These physicians may possibly have had cancer patients who were residents of Middlesex County who were not reported by a physician, hospital or laboratory in Middlesex County. This source of the error is felt to be very small.

The population of Middlesex County (estimated at 125,000 for 1939) is somewhat older in age structure than the population of the Province of Ontario.

The crude figures on incidence and prevalence of cancer are therefore greater relatively than one might expect for the whole province and this should be kept in mind when the figures are being used. When the rates are adjusted for age to the age distribution of the Province of Ontario at the 1941 census, they are reduced by about 15 per cent.

FINDINGS

A total of 1,116 cases of cancer were reported. Of these, 450 cases were residents of the City of London, 220 lived in Middlesex County but outside of London, and 446 were non-residents of Middlesex County. The large number of non-resident cases reported is due to the hospital facilities available in Middlesex County and the presence of a Cancer Centre in London. The data presented in the remainder of this report refer to residents of the County of Middlesex only.

TABLE I
RESIDENCE AND SEX OF CASES OF CANCER REPORTED
SPECIAL SURVEY, 1939

Place of Residence	Male		Female		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
City of London	178	35.2	272	44.6	450	40.3
Middlesex County (excl. London)	107	21.1	113	18.5	220	19.7
Outside Middlesex County	221	43.7	225	36.9	446	40.0
Total	506	100.0	610	100.0	1,116	100.0

Of the 670 Middlesex County cases, 285 or 42.5 per cent were males and 385 or 57.5 per cent were females. These cases were divided into five groups. The distribution by sex of these groups is presented in Table II.

TABLE II
CLASSIFICATION OF REPORTED CASES OF CANCER
RESIDENTS OF MIDDLESEX COUNTY, 1939

Patient Group	Number of Cases			Percentage		
	M.	F.	T	M.	F.	T.
1. First diagnosed during 1939—new cases	151	176	327	53.0	45.7	48.8
2. First seen prior to 1939, but treated during 1939	46	54	100	16.1	14.0	14.9
3. Observed during 1939, but not treated during 1939	58	114	172	20.4	29.6	25.7
4. First diagnosed at time of death	9	20	29	3.2	5.2	4.3
5. Not classifiable*	21	21	42	7.4	5.5	6.3
Total	285	385	670	100.0	100.0	100.0

*Patients reported by a laboratory only or for whom the date first seen was not reported.

Of the 670 cases reported, 327 or 48.8 per cent were new cases first seen during 1939; 427 cases or 63.7 per cent of the total reported were under treatment during the year; 25.7 per cent of the cases reported had been diagnosed in a previous year and were seen for follow-up observation purposes only and

not treated. In 4.3 per cent of the cases, diagnosis was made at death and in 6.3 per cent the cases could not be classified.

Verification of Diagnosis

Of the 670 resident cases reported, 63.3 per cent were confirmed by microscopic examination. Of the male cases 60.4 per cent were confirmed by biopsy and of the female cases 65.5 per cent. Of the female breast and genital organs cases, 86 per cent were confirmed by biopsy. Of the cases of "accessible" cancer (breast, genital organs, oral cavity, and skin) 69 per cent were confirmed microscopically. Only 51.5 per cent of the cases of skin cancer were confirmed by microscopic examination.

Extent of Disease

More than one-third (34.3 per cent) of the cases of cancer reported had a metastatic lesion. Of the 670 cases reported, 75 cases or 11.2 per cent were reported to have had lymph node involvement only; 60 cases or 9.0 per cent had involvement of another site; in 95 cases or 14.2 per cent the disease involved both lymph nodes and other sites. The primary sites with the greatest frequency of extension to either lymph nodes or other sites were breast, respiratory system, bone, and digestive tract.

Reported Cases vs. Recorded Deaths, by Site

In Table III there are presented the total number of cases, the number of new cases reported and the number of recorded deaths by primary site.

TABLE III
NEW AND TOTAL CANCER CASES REPORTED vs. RECORDED DEATHS
RESIDENTS OF MIDDLESEX COUNTY, 1939

Primary Site	Males			Females			Both Sexes		
	New Cases	Total Cases	Deaths	New Cases	Total Cases	Deaths	New Cases	Total Cases	Deaths
Buccal cavity.....	20	44	6	3	5	1	23	49	7
Stomach and duodenum	9	21	19	8	18	15	17	39	34
Rectum and anus.....	8	13	4	4	10	7	12	23	11
Other digestive tract...	21	34	22	36	61	36	57	95	58
Respiratory system....	3	5	3	4	4	1	7	9	4
Uterus cervix.....	..	..	..	12	28	7	12	28	7
Uterus body.....	..	..	..	11	26	7	11	26	7
Prostate.....	19	35	17	..	..	..	19	35	17
Other genital organs...	2	3	7	4	13	7	6	16	14
Urinary organs.....	7	14	*	4	9	*	11	23	*
Breast.....	..	3	1	49	115	28	49	118	29
Skin.....	44	89	2	36	80	2	80	169	4
Other sites.....	18	24	12	5	16	2	23	40	14
Total.....	151	285	93	176	385	113	327	670	206

*Deaths from cancer of the urinary organs included with deaths from cancer of "Other genital organs."

Cancer of the skin accounted for 31.2 per cent of all reported cases of cancer among males and 20.8 per cent of the cases among females, but only 2.1 per cent of the male cancer deaths and 1.8 per cent of the female deaths

were attributed to cancer of the skin. Cancer of the digestive tract accounted for 23.9 per cent of all male cases and contributed 48.4 per cent of the male deaths. In females, cancer of the digestive tract accounted for 23.1 per cent of all cases but 51.3 per cent of the deaths were so classified.

The digestive system contributed 25.2 per cent of all reported new cases in males and 27.3 per cent in females. Excluding rodent ulcer, cancer of the digestive tract leads among males, while for females the most frequent site was breast, with the digestive tract about equal to it. In 15 per cent of the female cases the disease was localized in the genital organs.

Morbidity Rates

Three different morbidity rates were computed to describe cancer morbidity in the population.

- (1) Incidence Rate: The number of cases first diagnosed during the reporting year per 100,000 population (Group 1 cases in Table II).
- (2) Prevalence Rate: The number of cases treated or diagnosed during the year per 100,000 population. This includes cases in Groups 1, 2, and 4 in Table II.
- (3) Total Case Rate: The total number of known cases of cancer per 100,000 population. This includes cases in all five groups in Table II.

The numbers of cases and the corresponding rates for each of those three measures, together with the recorded crude death rates by sex, are presented in Table IV.†

TABLE IV
MORBIDITY AND MORTALITY RATES* BY SEX
RESIDENTS OF MIDDLESEX COUNTY, 1939

Sex	Incidence		Prevalence		Total Cases		Mortality	
	Cases	Rate	Cases	Rate	Cases	Rate	Deaths	Rate
Male.....	151	244	206	332	285	460	93	150
Female.....	176	278	250	394	385	607	113	178
Total.....	327	261	456	364	670	534	206	164
Ratio F: M	1.14		1.18		1.32		1.22	

*Rates per 100,000 estimated population based on the 1931 and 1941 census data (male, 62,000; female, 63,400).

During 1939, the recorded cancer incidence rate in Middlesex County was 261 per 100,000 population. For males the rate was 244 and for females 278 per 100,000. When adjusted to the age distribution of the population of Ontario at the 1941 census, the rate for males becomes 209 and the rate for females, 231. The crude prevalence rate for the year was 332 for males, 394 for females, and 364 for both sexes combined.

The incidence rate for females is 14 per cent greater than for males. The prevalence and total case rates show an excess of females over males of 19 per cent and 32 per cent, respectively.

†Incidence and prevalence rates may be understated up to about 6 per cent due to the unassigned case groups in Table II.

Age and Sex Variations

Female cases substantially exceeded male cases (385 to 285). At ages 70 years and over, male cases predominate. Of the female cases, 46.5 per cent were under 60 years of age compared with 32.3 per cent of the male cases. The variation in the reported incidence and prevalence of cancer with age is illustrated by Table V.

TABLE V
MORBIDITY RATES BY SEX AND AGE
RESIDENTS OF MIDDLESEX COUNTY, 1939

Age Group	Incidence		Prevalence		Total	
	Male	Female	Male	Female	Male	Female
Number of Cases						
0 - 19	2	2	3	2	3	2
20 - 29	2	7	2	9	3	12
30 - 39	7	5	10	6	10	17
40 - 49	15	29	18	41	28	60
50 - 59	23	43	33	59	48	88
60 - 69	41	47	55	73	80	106
70 - 79	45	33	62	48	81	73
80 and over	16	9	23	12	32	27
Total.....	151	176	206	250	285	385
Rate per 100,000 Population*						
0 - 19	11	11	16	11	16	11
20 - 29	20	66	20	85	30	113
30 - 39	77	55	111	66	111	187
40 - 49	185	355	222	501	345	734
50 - 59	323	590	463	809	673	1,207
60 - 69	788	824	1,056	1,279	1,537	1,858
70 - 79	1,578	1,020	2,175	1,484	2,841	2,257
80 and over	1,843	789	2,650	1,052	3,687	2,366
Total.....	244	278	332	394	460	607

*Rates per 100,000 estimated population based on the 1931 and 1941 census data and the age distribution by sex at the 1941 census.

The crude cancer rates (all ages) is higher for females than for males. Between ages 20 and 69 years the rates are higher for females than for males, while at ages 70 and over the reverse is true, the male rates substantially exceeding those of females. The female excess at ages under 69 years is due to cancer of breast and uterus.

The sex variations in the primary site of disease among reported new cases are presented in Table VI.

In three of the primary sites, the crude male incidence rate exceeds the female rate—cancer of the buccal cavity 6 times greater, cancer of the skin 25 per cent greater, and cancer of the urinary organs 83 per cent greater.

DISCUSSION

The cancer incidence and prevalence rates for Middlesex County (as determined by this survey) do not differ widely from those published by

TABLE VI
INCIDENCE OF CANCER AND TOTAL CASE VOLUME
RESIDENTS OF MIDDLESEX COUNTY, 1939

Primary Site	New Cases				Total Cases			
	Male		Female		Male		Female	
	Rate*	Per cent	Rate*	Per cent	Rate*	Per cent	Rate*	Per cent
Buccal cavity.....	32	13.3	5	1.7	71	15.4	8	1.3
Digestive tract.....	61	25.2	76	27.3	110	23.9	140	23.1
Respiratory system.....	5	2.0	6	2.3	8	1.8	6	1.0
Genital organs.....	34	13.9	43	15.3	61	13.3	106	17.4
Breast.....	..	..	77	27.8	5	1.1	181	29.9
Urinary organs.....	11	4.6	6	2.3	23	4.9	14	2.3
Skin.....	71	29.1	57	20.5	144	31.2	126	20.8
Other sites.....	29	11.9	8	2.8	39	8.4	25	4.2
Total.....	244	100.0	278	100.0	460	100.0	607	100.0

*Rates per 100,000 estimated population based on the 1931 and 1941 census data.

Dorn (2) for the white population of the United States nor from figures produced for the United Kingdom (3). The area and the population included in the survey were small but the figures are useful as a guide to further study which should by all means now be pursued. It would be unwise to apply the rates computed to other counties or districts or to Ontario as a whole without a cautious examination and careful study of the entire picture.

The pilot survey of cancer in Middlesex County was successful. The difficulties encountered provide lessons for the future. The response of the physicians and hospital personnel was excellent and if there is anything useful in this report, the credit is theirs. The study should now be repeated and extended.

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APPENDIX A

CANCER CASE SURVEY—MIDDLESEX COUNTY—1939

ALL CANCER CASES (including probable Cancer)—SEEN, OBSERVED OR TREATED AT ANY TIME FROM JANUARY 1st TO DECEMBER 31st, 1939

ALL INFORMATION IS CONFIDENTIAL AND WILL BE USED FOR STATISTICAL PURPOSES ONLY.

NAME OF PATIENT To be used only for checking of duplicate cases		REFERENCE Not P.O. Address (Give city, town, village or township)		AGE in years for 1939		SEX M F		DATE First Seen at Cancer Center		SITE OF CANCER Primary Site (If a skin case, specify of)		Other Site Involvement (Specify by organ or system)		DATE Last Treated or Discharged (If not treated, specify)		DATE Last Seen and Followed up (If not followed up, specify)		CAUSAL FACTORS List them		ALCOHOL Habit in 1939		TYPE OF CANCER	
SURNAME	GIVEN NAMES	CITY, TOWN, VILLAGE OR TOWNSHIP	STREET ADDRESS	AGE	SEX	DATE	SITE	OTHER	DATE	DATE	CAUSAL	ALCOHOL	TYPE	CAUSAL	ALCOHOL	TYPE	CAUSAL	ALCOHOL	TYPE	CAUSAL	ALCOHOL	TYPE	
																							CAUSAL	ALCOHOL	TYPE
Sample	McCarthy	Charles, John (Mary)	London	35	M	Feb. 27	Stomach	Stomach	Feb. 27	Feb. 27	Stomach	Stomach	Stomach	Feb. 27	Feb. 27	Stomach	Stomach	Stomach	Stomach	Stomach	Stomach	Stomach	Stomach
1																							
2																							
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1. Report every case even though the patient is now dead, is receiving treatment elsewhere or is in hospital.
2. Report every case which you saw or treated prior to 1939 but which reported to you or was sent by you during 1939.
3. Report every case as cancer only for diagnosis, treatment or follow-up during 1939, with ICD CAME codes the form and return to the
4. District Hospital Association in the standard form.

14-2-2-10-1939

Signature _____ M.D.
Address _____

Serum Phosphatase Values of School Children

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SURVEYS of nutritional conditions of elementary school children in various parts of Canada have shown that small percentages receive adequate amounts of vitamin D (1, 2, 3, 4). It has been established that rickets is not just a disease of infancy, but can occur to at least age fourteen (5). Evidence regarding the actual occurrence of active rickets in school-age children in Canada would be useful in planning public health programs.

X-ray examination of children is not convenient for large surveys; moreover, there is doubt regarding its value for the diagnosis of active rickets in school-age children (5). In 1930 Kay (6) reported that serum alkaline phosphatase levels are raised markedly in active rickets and return to normal when healing is complete. Bodansky (7) developed a procedure for precise determination of serum phosphatase and recommended this estimation as an aid for the diagnosis of rickets (8). Phosphatase determinations have been used in several surveys of population groups (9, 10, 11). In 1946 Bessey et al. (12) described a new micro method which permits estimations on finger-tip samples of blood; this procedure is convenient for use with children on a routine basis. In discussing the value of the procedure Bessey et al. stated (12):

"The alkaline phosphatase of the serum increases early and markedly in rickets and returns completely to normal only after healing is complete. Because of this fact, serum phosphatase is the most satisfactory index now known for the detection of this deficiency."

However, Bessey et al. explained, as have other investigators, that an abnormal phosphatase level is not specific for rickets but is characteristic also of Paget's disease, hyperparathyroidism, liver disease, and other pathological conditions. None of these are likely to be of frequent occurrence in a group of school children.

There is little, if any, published information regarding phosphatase levels of Canadian school children. Because of repeated reports of a lack of vitamin D, it seemed useful to obtain data on phosphatase.

METHODS

Three groups of Toronto children were used as subjects: (1) 114 children in attendance at a summer health school; (2) 53 children in special health

This study was made possible by a grant for nutritional studies from the International Health Division of the Rockefeller Foundation.

classes during the school term; and (3) 244 children in a large urban elementary school. The children in groups 1 and 2 had been selected by the school health service as needing special care for various reasons such as underweight, tuberculosis contacts, heart conditions and low vitality. The children in group 3 could be considered as average for a large city. Phosphatase estimations on group 1 were made in July, 1949, and on groups 2 and 3 in January, 1950. Children in groups 1 and 2 received a vitamin supplement containing 800 units of vitamin D each school day. There were various opinions regarding the amounts of vitamin D obtained by children in group 3. The school nurse stated that practically all of the children received a vitamin D supplement regularly; information supplied by the children led us to believe that very few did so.

This study was conducted in co-operation with the Department of Public Health of the City of Toronto and thanks are expressed to Dr. Gordon Jackson and to Dr. L. A. Pequegnat for their assistance in making the necessary arrangements. The special interest of Miss Ruth Moyle, nutritionist in the Department of Public Health, was most helpful. Permission was obtained from the Board of Education through the kindness of Dr. C. C. Goldring and Mr. Z. S. Phimister. The very helpful attitude of school principals, teachers, physicians, and nurses facilitated greatly the investigation.

Through the co-operation of school principals, permission to obtain blood specimens was obtained from the parents. Finger-tip blood was used and from each child duplicate samples were secured. Each sample consisted of about 17 cu. mm. The blood was drawn into capillary tubes which were sealed at one end immediately after the blood was introduced.

Phosphatase estimations were made by the procedure of Bessey, Lowry and Brock (12). Blood specimens were obtained in the morning, about half of the determinations were done during the afternoon of the same day, and the balance during the following morning. In trials of this general arrangement, it appeared that over-night cold-storage of the blood did not affect the phosphatase values; comparison of the data obtained in the study showed that the average of phosphatase values obtained from blood stored over-night was 11.5 per cent greater than the average for values for blood analyzed the day of withdrawal. This difference is not sufficient to alter the interpretation of the values obtained. All phosphatase levels are given in Bodansky units, using the conversion factor of Bessey et al. (12).

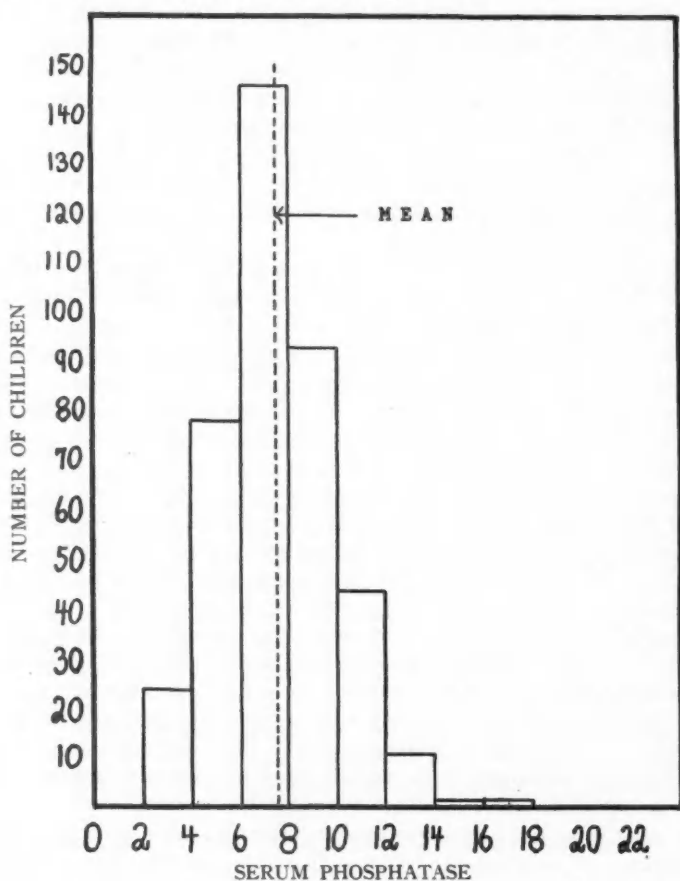
RESULTS

A summary of the phosphatase data is given in Table I.

TABLE I
SERUM PHOSPHATASE LEVELS FOR THREE GROUPS OF CHILDREN

Group	Number of Children	Phosphatase Values (Bodansky Units)		
		Range	Mean	Standard Deviation
1	114	5.0-16.2	8.8	2.2
2	53	2.2-13.3	6.2	2.4
3	244	2.2-20.0	7.3	2.5
all	411	2.2-20.0	7.5	2.4

A plot of the individual values, shown in the accompanying figure, shows that the distribution of values among all examined children is fairly normal. The mean value for boys was 7.7 and for girls 7.4.



The mean values for various ages are given in Table II. The numbers of children in various age groups are too small, particularly at ages 13, 14, and

TABLE II
MEAN SERUM PHOSPHATASE FOR VARIOUS AGES OF CHILDREN

		Age									
		6	7	8	9	10	11	12	13	14	15
Girls	Number	11	22	34	38	17	32	27	25	8	6
	Phosphatase	6.3	7.0	7.9	7.9	8.6	8.3	7.9	6.3	5.0	3.1
Boys	Number	20	34	26	28	20	25	15	9	11	3
	Phosphatase	6.5	7.9	7.7	7.9	7.9	7.2	7.9	9.0	7.6	7.6

15, to permit any definite conclusions. However, it is interesting that the older girls showed lower values while older boys did not.

DISCUSSION

In a paper on the use of serum phosphatase values to evaluate the severity of rickets, Bodansky and Jaffe (8) reported that the mean for normal children from 2-15 years was 7.3 with a range of 5-13 units. Cases of mild rickets showed a range of 20-30 units and severe rickets 20-190 units. In a study of 320 "normal" children Klasmer (9) reported a range of 5.6-15.0 units with a mean of 9.4 ± 2.8 . Youmans et al. (10), in a survey of children in Tennessee, used 12 units as the upper limit of normalcy for children; 10 children, aged 5-13 years, had values between 12 and 19 units and regarding them the statement was made, "It is possible that they reflect osteomalacia." In a Newfoundland study Adamson et al. (11) reported a mean serum phosphatase of 8.8 for 370 persons under 18 years.

It appears that the phosphatase level which should be regarded as indicative of rickets, whether mild or severe, is a matter of some doubt. In the present study no value over 20 (the lower limit of the Bodansky-Jaffe range for mild rickets) was found. Using the criterion of Youmans et al. (10), namely 12 units, 16 children out of the total of 411 would be judged as abnormal. Of these 16 children, 9 were girls and 7 were boys; the ages were 7-13 years. It should be noted that 9 of the 16 were in attendance at the summer health school. It is debatable whether the possession of a phosphatase level in excess of 12 units should be considered indicative of mild rickets. However, if the normal range is considered to be the mean plus or minus twice the standard deviation, the upper limit of normalcy calculated from the present data would be 12.3 units. On this basis the critical level used by Youmans et al. would be justified and 16 of the children examined in the present study would be abnormal.

It is interesting to compare the mean values found in several studies. This comparison is as follows:

Bodansky and Jaffe (8).....	7.3 units
Klasmer (9).....	9.4 units
Adamson et al. (11).....	8.8 units
Present study.....	7.5 units

The agreement between these several means is fairly good.

SUMMARY

In 411 Toronto school children, aged 6-15 years, serum phosphatase ranged from 2.2 to 20.0 Bodansky units, with a mean of 7.5 ± 2.4 . Although 16 children had phosphatase levels above 12 units, it is impossible to state whether any of the values were indicative of rickets and the need for further investigation is indicated.

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The Pollution Problem in Ontario

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POLLUTION is a world-wide problem. It is intensified in those areas where population and industrial developments are concentrated. It is aggravated where there is insufficient volume in the receiving water to provide adequate dilution. The worst conditions are likely to prevail in the warm weather when stream flows are at the lowest. This problem is continually changing, the strongest influence on which is industrial waste disposal. The answer to the pollution menace is both expensive and complex, yet it is by no means impossible. Steady progress is in sight, and it is hoped the day will not be distant when the required measure of control can be attained.

In examining the present situation in the Province of Ontario it is well to bring to your attention some of those factors, both favorable and otherwise, which have influenced pollution programs. A knowledge of the appropriate legislation will be helpful. It is necessary to visualize clearly the uses to which watercourses are to be put, the responsibilities of municipalities, industries, and private parties in protecting water supplies, the standards or objectives for stream sanitation, the problems which have been faced in recent years in undertaking corrective measures, as well as those programs which may be expected in the future. All of these related factors constitute a background essential for an understanding of present-day pollution problems.

Pollution Control Legislation

The administration of pollution control programs must be closely related to the legislation in force. In this province this includes enactments of the Federal Government, the Legislature of Ontario, and municipal councils. The federal legislation is directed chiefly at navigation, fisheries and wild-life. It will be apparent that this is restricted in its application to this general problem. Additional authority is granted to the International Joint Commission, on references made to it by the Governments of Canada and the United States.

The Public Health Act of Ontario deals specifically with pollution. It is designed primarily to protect health, and in this respect particular emphasis is placed on waters used for domestic purposes either by a municipality or riparian owner. The Department of Health, by virtue of Section 97 of this Act, is given general supervision over all waters used for public water supply, or for agri-

Presented at the annual convention of the Ontario Federation of Anglers and Hunters, held at Sudbury on January 31, 1950.

cultural, domestic or industrial purposes. The Department is also given the right to hear and determine any complaint made by a riparian owner that polluting material of any kind is impairing the quality of the water or rendering it unfit for accustomed or ordinary use. The recommendations of the Department under this Section of the Act, in respect to correction, can be enforced by the riparian owner in the Supreme Court or by a county judge.

The Public Health Act is, as might be expected, concerned chiefly with drinking-water supplies. It makes no specific reference to pollution which may injure fish or wild-life. In general, however, it may be assumed that any water suitable for domestic purposes will be satisfactory for fish, wild-life and recreational purposes. A significant factor in many instances is that where fish and wild-life are important there is no use made of this water for domestic purposes. It is not easy under those circumstances to determine a course of action under the implications contained in The Public Health Act. What action should any health agency, under those circumstances, be expected to take?

The preceding outline of the health legislation, as applied to pollution control in this province, will indicate wide and strong authority in some directions but weak or little control in others. With this appreciation of the legislation it is in order to discuss some of the administrative problems which continually occur in the maintenance of stream sanitation.

The Objective of the Department of Health

The Department of Health of the Province is cognizant of the serious problem resulting when pollution is not controlled. It is unnecessary to enlarge upon the effects of pollution. The danger to health is greatest where drinking-water supplies are menaced, either by bacterial contaminants or by industrial wastes which create poisons or tastes and odors in the water. Recreational facilities are denied the population when the water is impaired by these wastes. Fish and wild-life, important both to the sportsman and to commerce, cannot thrive where pollution is serious. Agriculture and industry, basic necessities in the welfare of this country, must have water free from interfering pollution. All these factors are well known to health agencies, and they are most anxious to play a full part in their supervision. This is why the objective of the Department of Health has been to apply the necessary corrective measures to stream pollution just as promptly as possible. The anticipated time for this was to be immediately after the war.

It is desirable to bring to your attention some of the factors which are involved in this program for attacking pollution in surface waters. An understanding of what has been accomplished, as well as an appreciation of those difficulties over which there is little control, will be helpful in attaining the fullest cooperation of all groups and individuals. This cooperation is imperative in attaining our goal—namely, the maintenance of satisfactory quality in our streams, while at the same time enabling municipal growth and industrial expansion to take place without adding intolerable burdens.

What Has Been Accomplished

It is well to place before you what has been accomplished in recent years in meeting this problem. The difficulties of the post-war years have been great,

but in spite of this there has been substantial progress in the treatment of sewage and industrial wastes. More activity has taken place since the war than for any similar period in the last twenty-five or more years. New sewerage systems have been constructed, sewage disposal plants have been built and old ones have been modernized or replaced, industries have spent large sums in treating their wastes. The expenditures for sewage works, including sewers and treatment plants, for 1945 to 1949 inclusive, approved by the Department of Health have exceeded 40 million dollars. This does not include outlays by industries. More important than these actual figures is the desire on the part of the public, municipalities and industry, to go forward with these improvements and to provide the best sanitary environment for the people of this province.

Some comparison with what has been done elsewhere in this same period may serve a useful purpose. The major number of the sewage treatment plants in Canada are in the province of Ontario, and this is where these new works are being undertaken. In the United States the problem of waste disposal is generally more aggravated than in Ontario. They are attempting to meet the challenge of clean streams, but their great industrialization has created problems more serious than in this country. Many municipalities in the United States enjoyed an outstanding advantage over Canadian communities in the depression years when they were able to obtain large sums of money from the Federal Treasury for building sewerage systems and overcoming pollution problems.

Difficulties Involved

In spite of the very significant accomplishments in recent years in Ontario, there is no thought of minimizing the work yet to be done. The completion of this is the most important part of the program. It is necessary to place before you some of the difficulties which have been present in the past and which must be expected in the future. Unfortunately a number of these factors are present.

One of the most serious items in pollution control has been the stagnation in municipal construction programs which occurred during the depression years and the war period. In all that time of fifteen years it was almost impossible to advance these necessary works. Funds were not forthcoming in the thirties, and during the war it was necessary to divert materials and labor to other uses. In that same period, particularly during the war, the urban populations grew at unprecedented rates and industry expanded both in number of plants and in variety of processes and wastes. The situation in the United States was less acute because of the funds made available for municipal programs. There was thus in Canada a great backlog of needed municipal improvements at the close of the war.

A great deal of planning was done during the war years with the expectation that these projects would be put into operation as soon as hostilities ceased. These works were planned primarily to relieve any unemployment situation which might be encountered. The intervening years have shown how inapplicable was that planning. Reconstruction programs, including in a large measure industrial expansion, took prior claim on available materials of construction and supply of labor. Contractors were not greatly interested in bidding on sewerage systems or waste disposal plants of any kind. It was difficult to obtain competitive bids, and

the costs were increasingly high. Some municipalities had to call for bids a number of times on these works.

These construction difficulties persisted until the latter part of 1949. It now appears that conditions are definitely improved and greater competition is in evidence. Unfortunately costs have risen to a point where they are now about double what they were in 1939.

The problem of financing pollution remedial measures, now that materials and competitive bidding have returned, is a serious one. Many municipalities recognize their problems and desire to go forward with sewage works but appear unable to finance them. Two measures have been adopted to assist in this. One is the loan program offered by the Ontario Government, thus assuring low interest rates. The other is the method of financing by sewer rents as contained in a recent amendment of the legislature.

Methods for treatment of polluting substances create a further difficulty. The problem is less serious for sewage, and the methods for treatment of this are now well standardized. The same cannot be said about industrial wastes. These are variable and new wastes are constantly being encountered. Methods of treatment have not yet been developed for some of these, while for others the costs are exceedingly high.

Many unsatisfactory conditions throughout the province are the result of discharges of waste to storm drains. These connections are made either with the consent of the municipality or without its knowledge. The condition gradually becomes worse and its correction is a great difficulty without heavy expenditures.

Objectives in Stream Sanitation

One of the serious problems associated with stream sanitation arises from the interpretation of what is a reasonable standard. Must the stream be maintained entirely free from pollution or can it be considered as a means for carrying off wastes?

Two views on stream quality standards are frequently expressed. Both are extreme. One insists that no pollution should enter a water course, and all wastes should be treated to a degree that this condition can be maintained. This is not a feasible solution, and it is impracticable where industry and municipalities must exist. The other view is that these streams should be used as open sewers to carry away all wastes. The claim is made that industry and communities have a right to dispose of their wastes in this manner. This also is an untenable attitude and one which calls for little support from reasonable people.

Fortunately there is a middle course which should prevail. It involves a sufficient degree of treatment of wastes to prevent an injurious effect on the receiving waters. This treatment will vary in each place. Where there is a heavy flow of water, dilution will obviate the necessity of treatment to the same degree as where the flow is small. Similarly, the use being made of the stream will be a significant factor. For these reasons it is not feasible to adopt one standard of effluent for all circumstances.

What May Be Expected

The important problem is how to bring about the necessary remedial measures. In this, the cooperation of all groups is essential. Municipalities and industries must be aware of the need for expenditures which will provide sufficient treatment of all wastes. Much additional research will be required on the treatment of industrial wastes in the most efficient and economical manner. This will have to be a continuing process since the types of wastes change frequently and new problems are ever appearing.

At this time many indications to pollution control are favorable. Recent progress has been substantial in spite of serious obstacles. If this can be continued and combined with effective research programs and methods of financing, there is every reason to believe that an early solution will be reached. That objective should be the maintenance of all streams in such condition to serve the purposes for which they were intended and at the same time impose no unwarranted burden on the progress of developments in this country.

Bacteriophages for *C. Diphtheriae*

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THE use of bacteriophage in the classification of strains within a species of bacteria has proven to be of practical value in the case of the typhoid and other enteric bacilli and in staphylococci (1, 2, 3, 4). Though phages have been isolated for *C. diphtheriae*, their application in classification has been limited to two phages isolated by Keogh et al. (5) which were used to classify strains isolated in Australia. The reported results indicated a close correlation between phage sensitivity and serological type. Nothing has, however, appeared in the literature to indicate that the phages isolated by Keogh have been applied to the typing of *C. diphtheriae* subsequent to this report. The purpose of the present investigation was to isolate specific phages for *C. diphtheriae* with a view to their use in classification. The isolation, adaptation, and relationship between phage sensitivity, type and source of strain are described.

METHODS

Isolation of Phages

The cultures examined included 135 strains of virulent *C. diphtheriae* and one each of *C. hofmanni* and *C. xerosis*. These cultures were obtained through the directors of the laboratories of the departments of health of Ontario and Quebec, for which courtesy we extend our thanks. The age of the cultures ranged from one week to six months from the date of isolation. Three methods were used for the isolation of phage. (1) Cultures were "spotted" one on another on serum agar after the method of Fisk (4). (2) The broth culture supernatants after centrifugation were spotted on cultures in a similar manner. (3) Combinations of several cultures were grown together in broth, and random supernatants propagated on this mixture. After four passages the resultant supernatant was spotted on the cultures which had been included in the combination, on solid medium. In all, eight phages were isolated, six of which appear to be identical. The most fruitful method in our hands of revealing lysogenic strains was that of spotting supernatants on cultures. Though plaque formation was observed in many instances, the number of phages successfully propagated was disappointingly low.

The phages isolated in this study were designated 22/6, 25/6, 26/6, 28/6, 29/6, 30/6, 37/6 and C/13. This designation follows the accepted nomenclature for phages isolated from lysogenic strains, in which the number of the phage carrying culture is given, followed by the number of the propagating strain. The phages 22/6, 25/6, 26/6, 28/6, 29/6, 30/6 and 37/6 were propa-

gated equally well on culture No. 5 and culture No. 6. These strains had been classified as *intermedius* and *gravis* respectively.

Propagation of Phages

The phages were propagated with their susceptible cultures on serum agar plates and in serum broth. The method used for plate propagation was that described by Williams Smith (6) wherein the mixture of phage and culture is spread on a plate, incubated at 37° C., and the following day the phage washed off with 5 ml. of broth. This is centrifuged and the supernatant used for subsequent passages.

Propagation in broth did not regularly produce high-titre lysates. It proved to be, however, a convenient method for the preparation of relatively large quantities of phage. By suitably varying the concentration of bacteria and the amount of phage in the mixture, phage preparations with a titre of 10^{-8} were obtained.

Methods of Assay

The strength of the phage preparations was determined by spotting dilutions of the phage on the susceptible culture. The highest dilution of phage showing confluent lysis of the susceptible strain is referred to as the titre of the phage. The plates were read at 6, 18 and 48 hours. The result at the 18-hour reading was accepted as the end point. In cases where it was necessary to determine the actual number of phage particles per ml. for propagation of phages, a modification of the plaque count method as described by Hershey et al. (7) was used.

Adaptation

Additional phage strains were obtained by "growing" the phage with other cultures. In this way variant or mutant phages were obtained, which lost their ability to lyse the original propagating strain, and became specific for the new strain with an extended range of activity. The one exception encountered was phage 37/6/126 which retained the ability to lyse the primary host.

Phage C/13 grown on other strains provided the phages C/13/2, C/13/132, and C/13/126. Phage 37/6 grown on other strains gave rise to phages 37/6/136 and 37/6/126.

RESULTS

Description of Phages

The phages all exhibited typical characteristics of bacteriophage. They increased on propagation with their susceptible cultures, formed plaques on solid medium, and manifested a host specificity. Under optimal conditions inhibition of growth of the susceptible culture in broth was observed.

The plaques were similar in that resistant colonies appeared in the central area of the plaque. The plaques of C/13 were small and even-edged (Fig. 1 (a)), while those of the others had irregular, rough edges (Fig. 1 (b)). The

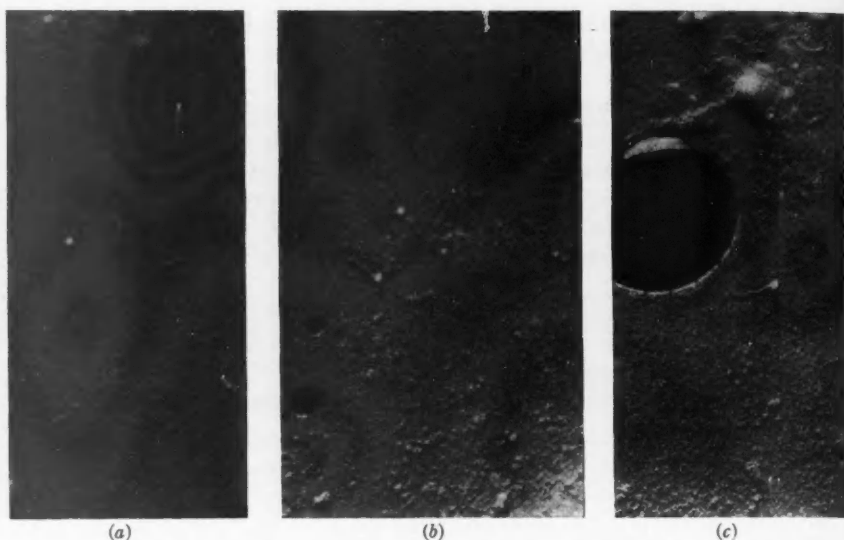


FIG. 1.—Plaque formation of *C. diphtheriae* phages.

plaques of phage C/13/2 were larger than the others and the central resistant colonies appeared quickly (Fig. 1 (c)). On continued incubation, the zone of lysis extended to give a "halo" appearance around the plaque. Occasionally with this phage two kinds of plaque were apparent. This may be an evidence of the instability of this adapted phage.

Using the replica technique as described by Edwards and Wyckoff (8), an electron micrograph of phage C/13 was obtained (Fig. 2). The morphology and size of this phage is comparable to that of many other phages. The dimensions were found to be as follows: head diameter 60 μ , tail length 300 μ , tail width 10 μ .

Range of Activity

Undiluted phage preparations were used to spot the 137 cultures. The strength of the phages was such that they produced confluent lysis of their

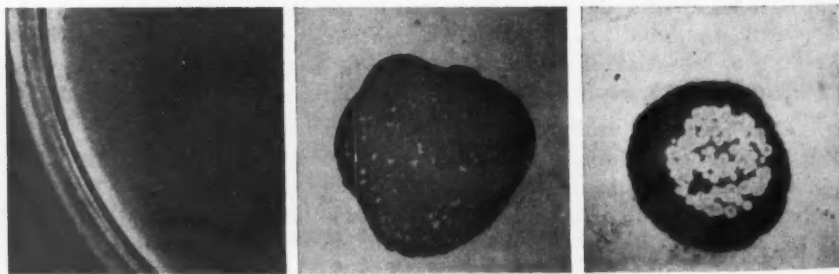


FIG. 2.—Electron micrograph of phage C/13, $\times 20,000$.

susceptible cultures in a dilution of 1:100. Twenty-nine of the 137 cultures were susceptible to one or more of the phage preparations.

On the basis of plaque formation and range of activity the phages were arranged in three groups. Group A included phage C/13 and its mutants, Group B all phages arising from lysogenic culture No. 37, and Group C the identical phages 22/6 to 30/6 obtained from 6 lysogenic gravis strains.

The sensitivity pattern of the 29 susceptible cultures provided no definite basis for classification. The adapted phages had a much greater range of activity than the original phages. There is some suggestion that gravis and intermedius strains are susceptible to one phage, and mitis strains to another, but there are discrepancies and considerable cross-reaction. In two instances there is a relationship between sensitivity to phage and type and source of strain; seven gravis strains from one outbreak were susceptible to one phage, and three epidemiologically related mitis strains susceptible to another phage. Further investigation with regard to susceptibility of related strains is necessary before any conclusions can be drawn. The possibility of adapting the phages to additional strains presents a subject for further investigation.

DISCUSSION

Of the three methods used for the isolation of *C. diphtheriae* phage, two proved to be successful. In all, eight phages were isolated from lysogenic strains. Six of these appeared to be identical. The other two are considered tentatively to be different phages on the basis of plaque formation and the range of activity. What was undoubtedly phage action was observed with several culture combinations, but the phages were not successfully isolated. This suggests that the number of lysogenic strains in this species is much greater than the results here indicate.

That there appear to be three phage groups counters the view that all cultures carry an identical phage; however, it was also apparent that the same phage was isolated from six different cultures. It was possible to adapt two of the phages to a limited number of the cultures and in so doing the phage lost its specificity for the original propagating culture and became specific for the new host. Where the same phage was adapted to two different strains, separate mutants were obtained which gave some cross-reaction but lysed the homologous culture to a higher titre.

The phages appear to be similar in plaque formation to those described by Keogh, but their range of activity differs in that they do not act exclusively on strains of one type.

SUMMARY

- (1) Three phages were isolated from lysogenic *C. diphtheriae* cultures. One of these was isolated from each of six different gravis strains.
- (2) Two of the phages were adapted to strains other than their propagating strain and following adaptation the range of activity was extended.
- (3) No definite pattern of susceptibility of strains related as to type or source was established. In two instances epidemiologically related strains showed a uniform susceptibility to a phage.

(4) The two adapted phages present a promising lead for future investigation.

Grateful acknowledgement is extended to Dr. Donald Fraser for his guidance throughout the study; to Dr. C. E. van Rooyen for advice concerning the preparation of electron microscope specimens; and to Mr. D. Welch for taking the micrograph.

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CONTROLLING BRUCELLOSIS

IN 1928 the first cases of infection in man with *Brucella abortus* in Canada were reported by Harris et al. (1) and by MacLean et al. (2). The term "undulant fever" was used and is descriptive of the acute form of this infection. In view of the high incidence of Brucella infections in cattle and swine, it was expected that many cases of undulant fever would be reported to health departments in Canada. In all of the provincial laboratories routine examinations of samples of blood serum from patients suffering from continued fevers include agglutination tests for Brucella infections. Over the years the number of cases identified or reported has been small. Alice Evans, in her extensive studies of Brucella infections in man and animals, established the occurrence of chronic infections giving rise in man to ill-defined illnesses extending over years and responsible for a considerable volume of sickness. The acute form has not been as frequently found in Canada as had been anticipated. In many parts of the world, Brucellosis is an acute, serious illness.

Before the discovery of the newer antibiotics, there was no successful method of treatment. Sulpha drugs had been helpful, but many cases were resistant. Attempted treatment with immune sera and vaccines had failed. Recovery followed after a prolonged illness marked by frequent relapses, and there was little to indicate that any method of therapy shortened the period. Today the picture has changed, following the introduction of Chloromycetin and, later, of Aureomycin. Dramatic results follow their administration. Within a few days, blood cultures become negative, the fever subsides, and the patient recovers. However, relapses occur frequently.

The latest addition to the list of antibiotics is Terramycin. Recently a symposium was presented before the Section of Biology of the New York Academy of Sciences, outlining the present knowledge of this promising new antibiotic. Included in the reports were findings in the treatment of Brucellosis. It is now known that Brucella strains do not develop resistance to the antibiotics so far used in treatment; and it is known, too, that relapses occur frequently in cases treated with Chloromycetin, Aureomycin, or Terramycin.

It is clear that these antibiotics inhibit the growth of *Brucella* strains but do not completely rid the body of the offending agent. A series of cases were reported of acute Brucellosis with positive blood cultures, which responded readily to the administration of Terramycin. To prevent relapses, a second short course of treatment was given within a month of the initial treatment and it was suggested that a further short treatment be given three months later. In the treatment of Brucellosis, Streptomycin has been given with Chloromycetin or Aureomycin, but there is no evidence that this combined treatment has greater effectiveness. In chronic Brucellosis, treatment with these antibiotics has given excellent results. The extent of chronic Brucellosis in Canada is not known. It may well be that a very considerable volume of undiagnosed illness of a chronic type is due to *Brucella* infections.

In considering the problem of Brucellosis, of first importance is calfhood vaccination. The Dominion Department of Agriculture has just announced a plan for extending the use of vaccination against this disease by supplying, in all the Provinces, *Br. abortus* vaccine for the immunization of calves. As in BCG vaccination against tuberculosis, an attenuated strain is employed. A strain of *Br. abortus* known as Strain 19 has been developed which is avirulent. The effectiveness of the vaccination is dependent on the injection of adequate numbers of the living organism. The value of the vaccine has been thoroughly established, and it is pleasing to record that in Canada the Ontario Veterinary College, under the Ontario Department of Agriculture, has taken a leading part in the demonstration of this measure. By widespread vaccination of cattle the incidence of Brucellosis will undoubtedly be reduced.

Of outstanding value in the control of the disease is the proper pasteurization of milk. The prevention of this disease alone warrants fully the pasteurization of all milk supplies. By widespread use of preventive vaccination in cattle, great progress can be made in the control of Brucellosis, but pasteurization will continue to be an important safeguard against this disease and other infections which may be transmitted through milk. The use of the newer antibiotics marks a new era in the therapy of Brucellosis.

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THE ROCKEFELLER FOUNDATION IN CANADA

IN the story of the development of public health in Canada during the past twenty-five years the contribution made by the Rockefeller Foundation has a large place. Through its International Health Division, the establishing of full-time health units in Canada was rapidly advanced after the opening of the Beauce County Health Unit in Quebec in 1928, which was followed by the establishing of a number of health units in that Province. It is of interest that the first unit in Canada was opened in 1920 at Saanich, B.C., by the

Provincial Department of Health. However, the development of the health unit movement followed the work in Quebec; in this the International Health Division gave financial assistance, and through the leadership of Dr. John A. Ferrell the foundations were well laid. The establishing of the School of Hygiene in the University of Toronto in 1924, providing post-graduate facilities for the training of public health leaders in Canada, was of primary importance to the health movement, and the granting of fellowships has made possible the enlistment of more than two hundred professional members. Year after year, other contributions have been made by the Foundation through the conduct of surveys, discussions with public health leaders, and aid to nursing education.

The International Health Division's program on this continent is administered by Dr. Hugh H. Smith, and since 1945 a Canadian office has been maintained in Toronto to facilitate the direction of the program in Canada. Dr. William A. McIntosh served as the Foundation's representative in Canada until last January, when he was promoted to be Regional Director in the Near East. He has been succeeded by Dr. D. Bruce Wilson.

Dr. Wilson is a native of Canada, having been born at Merrickville, Ontario. He graduated in medicine from the University of Toronto in 1920 and in 1928 obtained the Diploma in Public Health. He has been associated with the International Health Division of the Foundation since 1920, when he joined the Field Staff. In 1920-21 he served as county health officer for North Carolina and New Mexico, and during the following six years was engaged in hookworm control in Spanish Honduras and Colombia. In 1928 he was assigned to Brazil with special responsibility for yellow fever studies and control and later the eradication of *Anopheles gambiae* from that country. Subsequently he served as Regional Director for Africa and the Middle East. From September, 1944, to June, 1946, he was Consultant to the Surgeon-General of the U.S. Army. In 1942-43 Dr. Wilson was associated with Dr. McIntosh in a survey of the public health services of the City of Halifax and of the City of Sydney and the Island of Cape Breton. Local expansion and intensification of public health programs followed these surveys.

Canadian public health workers will find that Dr. Smith and Dr. Wilson are keenly interested in advancing public health in Canada through the International Health Division, in whatever ways it may be possible for the Rockefeller Foundation to assist.

The Canadian Public Health Association 1949-1950

REPORT OF THE COMMITTEE ON PROFESSIONAL EDUCATION

PUBLIC HEALTH in the United States entered a new era in 1935, with the passage of the Social Security Act. Among its provisions were grants from the Federal Government to the States for the extension of public health services. As early as 1921 the Sheppard-Towner Act provided grants for the extension of child health services but these had been withdrawn a few years before the Social Security Act was passed. The policy of grants-in-aid from the Federal Government to State departments of health included the requirement that public health appointments should be made on the basis of merit and duly recognized educational and training qualifications. Because of the immediate need of establishing qualifications for the various personnel engaged in public health, the American Public Health Association appointed a Committee on Professional Education and charged it with the responsibility for preparing statements of qualifications for the offices of health officer, sanitary engineer, and other personnel. Subsequently a Committee on the Merit System was established, with full-time officers whose work was to develop plans whereby State and municipal departments of health might appoint personnel on the basis of their training, experience, and ability. The Committee on Professional Education has since established qualifications for all public health personnel, including the specialized fields, and has developed unique and highly effective examinations which State and municipal departments and other agencies may obtain.

Canadian public health workers have been represented on the Committee on Professional Education; indeed, from the founding of the American association, Canadians have been extended all the privileges of membership, and the Association has included Canada in all its undertakings. Their Committee on Professional Education generously acceded to a request from the Canadian Public Health Association for permission to adapt certain of their reports for Canadian use, as it was felt that the American reports had been prepared with such care and mature deliberation that it would be a duplication of effort to start anew in formulating similar Canadian reports. Only minor changes have been found desirable in the reports on the Educational Qualifications of Health Officers, Public Health Laboratory Workers, Public Health Engineers, and Public Health Nurses.

During the past year the Canadian Public Health Association's Committee on Professional Education has given further attention to the qualifications of sanitary inspectors and has had before it the American Public Health Association's report on sanitarians. To facilitate its work, the Canadian committee, consisting of representatives in the various fields of public health, functions through

Reports presented at the thirty-eighth annual meeting of the Canadian Public Health Association, held in the King Edward Hotel, Toronto, June 12-14, 1950.

a nucleus committee which is centrally located. In 1948 this sub-committee prepared a report on the qualifications of sanitarians and sanitary inspectors, and submitted its recommendations to the national committee and to the Canadian Institute of Sanitary Inspectors. The suggestions were reviewed during 1949 and in April of this year a report was received from the Institute outlining its views on the proposed changes in the qualifications and classification of sanitary inspectors and on improvements in training. Copies of this report have been sent to the provincial departments of health for their comments. As there has not been time for a study of the report, the members of the nucleus committee are unable to do more than record that there is agreement about increasing the field training required of candidates and about the importance of organizing formal courses of instruction extending over a period of several months. The Association's "Manual for Sanitary Inspectors" and the correspondence course provided annually since 1942 have proved of great value but must be supplemented by formal instruction given in appropriate centres. It is felt that at least four centres should be established in which these extended courses could be provided.

The value of the Committee's work will be more and more evident as the extension of public health services places increasing stress on the obtaining of qualified public health personnel in adequate numbers. In this connection, the Association has made a valuable contribution through its two salary surveys and recommended minimum salary schedules for the various appointments in public health. Provincial and municipal departments of health in Canada have not yet established the appointment of public health personnel on a Merit System basis as in the United States. The importance of defining the requirements for appointments in the various fields will be increasingly recognized, however, as public health services are further extended.

R. D. DEFRIES, M.D., D.P.H., *Chairman.*

FINAL REPORT OF THE NATIONAL COMMITTEE FOR SCHOOL HEALTH RESEARCH, SPONSORED BY THE CANADIAN EDUCATION ASSOCIATION AND THE CANADIAN PUBLIC HEALTH ASSOCIATION

A FIVE-YEAR PROGRAM IN SCHOOL HEALTH RESEARCH

THE National Committee for School Health Research was organized in the summer of 1945 to prepare the way for administrative action to improve the health of Canada's school population. The origin of the committee may be traced to a report published by the Canada and Newfoundland Education Association (now known as the Canadian Education Association) in 1943. This publication, under the title "Report of the Survey Committee", presented the results of a survey to determine the most urgent educational needs in Canada. The following excerpt from the report indicates the feeling of concern which prompted the organization of the school health research project.

Chief among the above [referring to a list of some fifteen needs of education] is the need of a school health program integrated with a national health plan and with community health schemes. Health has progressed far beyond the status of a mere subject

of study on the curriculum; it has become a basic and integrating element in the whole school program. Too often, however, lip service only is paid to this principle; practice lags far behind teaching. Too few communities have made their schools examples of healthful living conditions or have provided medical, dental, nursing and immunization services for their children. To enable every community to do what the most advanced are doing requires the outlay of large funds; it needs, too, the guidance of public health experts and the enlightened co-operation of several departments of the Dominion and provincial governments. That the section of this report dealing with health follows this Introduction immediately is no accident. School health is of primary importance in our educational and national development.*

Early in 1945 the Directors of the Canadian Education Association invited the Canadian Public Health Association to join them in sponsoring a school health research program which would investigate factors affecting the health of the pupil. Financial support for the program was secured from the Life Insurance Companies of Canada through a grant made by the Standing Committee on Public Health of the Canadian Life Insurance Officers Association. Tentative plans were made for a research project of five years' duration.

The personnel of the National Committee includes four members from the Canadian Public Health Association and four from the Canadian Education Association. The first chairman of the committee and the prime mover as president of the Canadian Education Association was the late Dr. Fletcher Peacock, who was the Director of Education in New Brunswick. Following Dr. Peacock's death in January, 1949, Dr. C. E. Phillips of the Ontario College of Education, University of Toronto, was elected chairman.

At the beginning of the program each province appointed a school health committee to assist in the research studies. These committees, which represented the two departments of government, Education and Health, have been invaluable throughout the entire project. Their assistance in selecting representative samples of pupils and in giving supervision to the research studies at the provincial level has contributed immeasurably to the total program.

THE FIRST PROJECT—A GENERAL ASSESSMENT

In looking forward to a concentrated research effort over a period of five years, the National Committee considered it best to begin the research program with a general assessment of existing conditions in Canadian schools (elementary and secondary). This survey was made during the school year 1945-46, and the results published as Report No. 1, "A Health Survey of Canadian Schools". Because of the valuable assistance received from school inspectors and principals in each province, it was possible to gather data covering approximately 90 per cent of the elementary schools and 75 per cent of the secondary schools in Canada. These data revealed many weaknesses and deficiencies in the physical environment of the school plant, the health teaching, the nutrition of pupils, and the mental health of pupils. For example, it was revealed that, in one-room schools, 80 per cent had no artificial illumination of any kind; over 70 per cent had outdoor toilets and only 14 per cent had the water supply tested periodically. In the

*Report of the Survey Committee, Canadian Education Association, 206 Huron St., Toronto, Ontario. 1943. p. 9.

instructional field it was found that motivating measures such as health experiments or excursions were conducted in less than 10 per cent of all elementary school classrooms, and films or slides on health topics were used in approximately 15 per cent of the classrooms only. It was also found that only 23 per cent of health teachers in elementary schools held specialist standing. Nearly 25 per cent of elementary school inspectors considered the present methods of health teaching as unsatisfactory, while 71 per cent considered them only partially satisfactory. The survey showed, also, that nutrition instruction was given in only 35 per cent of elementary schools and only 5 per cent of elementary schools received periodic visits from a qualified nutritionist. Less than 1 per cent of elementary schools provided a noon lunch, while a hot dish or beverage was provided in less than 20 per cent. Milk was provided in approximately 6 per cent of elementary schools.

In the light of these and other results of the survey the National Committee for School Health Research has proposed the following recommendations.

A. School Environment:

1. That adequate artificial lighting be provided in all schools.
2. That the best possible natural lighting be maintained by regular and frequent window cleaning and by the elimination of unsuitable window shades and other obstructions.
3. That classrooms be adequately heated and ventilated by providing a basement and a central heating system in all newly constructed schools and in all other schools where such improvements can be effected and, where the use of a stove must be retained, by surrounding the stove with a metal shield.
4. That outdoor toilets be replaced by more hygienic facilities, preferably flush toilets, within the school or in a structure annexed thereto.
5. That convenient hand-washing facilities with soap and paper towels be provided.
6. That provision be made of an approved water supply as indicated by the Department of Health and that such drinking water be delivered under pressure to a fountain in the classroom or, if this is not possible, be kept in a closed container having a spout, with individual drinking cups provided.
7. That equipment to measure temperature and humidity be placed in all schools.
8. That provision be made in all schools of a First Aid Kit with suitable instructions for the care of injuries.
9. That the comfort of the child be ensured by providing, in all schools, adjustable desks or chairs of various sizes.

B. Health Teaching:

1. That the objective of health teaching be the present and future health of the pupil.
2. That the content of health instruction (and physical education) be re-examined to eliminate material of doubtful validity.
3. That examinations which test the pupil's knowledge of facts and rules receive less emphasis as criteria of the success of health teaching.
4. That schools be encouraged to provide sources of supplementary reading in health.
5. That, as health services in the schools become more widespread, all teachers and teachers-in-training be made aware of the health problems of their pupils.
6. That health committees among staff members be encouraged in larger schools.
7. That summer courses in health teaching be provided for the teachers of each province.
8. That provision be made in secondary schools for attention to human relations and to the social adjustment of pupils.
9. That the physical and mental health of children be recommended to adult education groups as a topic deserving of serious study.

C. Nutrition:

1. That, where local needs justify the condition, a school lunch program be organized to provide at least one nutritious dish; the ultimate objective of such a program to be the provision of a complete lunch.

2. That milk be provided for all children who do not get sufficient milk at home.

D. Mental Health:

1. That teachers-in-service receive instruction in child psychology and in the detection, appreciation, and solution of various types of mental health problems.

2. That gifted children receive definite consideration in the larger schools in each province and that enriched programs be the minimum provision for such children in all schools.

3. That suitable provision be made for backward pupils in elementary schools.

4. That suitable provision be made for physically handicapped pupils in elementary schools.

5. That in secondary schools a varied program be provided for students of different interests and capacities, and diagnostic services be provided for maladjusted students.

6. That guidance programs in both elementary and secondary schools be extended to problems of social adjustment.

THE SECOND PROJECT—MENTAL HEALTH IN THE SCHOOLS

The second report published by the committee contained data on the most frequent and the most serious mental health problems among pupils. These data were submitted by school inspectors and principals throughout the provinces and were based upon the opinions of these educators. Such opinions indicate that one major cause of unhealthy social and emotional development among school children lies in unsatisfactory home conditions. Educators agree that the feeling of insecurity resulting from a broken home, the lack of parental affection and interest in the child's welfare and decreasing importance of the home as a unit of society give rise to conditions which lead to serious maladjustments among children. Problems caused by fear are also considered of major importance. In this regard the fear of failure, the fear of examinations, the fear of the teacher, and the fear of not being accepted by the group were mentioned specifically by the school inspectors and principals.

A few general thoughts from school inspectors and principals indicate areas where additional attention to mental health problems seems necessary. These educational personnel are of the opinion that:

1. Mental health problems will be reduced to a secondary position if we strive for smaller classes with better trained teachers and a release from the system of education in which we attempt to have forty-odd children of widely varying abilities all learn the same things at the same rate of progress.

2. Brightness and cheerfulness are needed in every classroom to stimulate the best in a child.

3. Teachers must realize the importance of a healthy emotional personality as well as other qualifications—teachers must be "balanced folk".

4. Parent education is needed on a far more sweeping scale than heretofore. Writers, speakers and workers in the field of mental health must be careful to avoid rash utterances which arouse public suspicions. The school enjoys high and rapidly increasing prestige and provides a sure contact with a large number of people of a wide range in age. Adult education promises to strengthen and broaden this contact.

Report No. 2 also contains a number of case studies which were gathered

from the files of child guidance clinics in many of Canada's larger cities. These specific cases indicate the variety of problems met by the clinician and the effort which is expended on each case.

THE PROBLEM OF ABSENCE FROM SCHOOL—REPORTS NOS. 3 AND 4

A detailed investigation of pupil absences was undertaken in the school year 1946-47 and has been reported in the third publication of the National Committee. This study, which was the most extensive project undertaken in the health research program, included 15,323 pupils representing city, urban, and rural schools in each province. The data have been analyzed for 44 specific medical causes and 9 different non-medical causes. Separate analyses have been made for each sex, for different age groups, and for each month of the school year. Lengths of absences have been studied also, as well as the relationship of certain socio-economic factors to days lost from school.

The study showed that, on the average, the urban pupil in Canada lost 11.6 days and the rural pupil, 16.6 days, in the complete school year. Among the urban children approximately 75 per cent of this absence was due to medical causes, whereas among rural children the medical causes accounted for approximately 50 per cent of the absence. However, the actual rates of absence for days lost from medical causes were shown to be nearly identical for the urban and rural groups. On the basis of 1,000 pupil-days, the rate for the urban sample was 44.7 and 43.3 for the rural sample. The greatest cause of absence among urban and rural pupils was the group of respiratory diseases, which accounted for one-half of all medical absence. This was followed by communicable diseases, digestive ailments, injuries, and skin infections, in that order.

Definite variations in the extent of absence among different age groups were revealed in the study. In the urban and rural samples, absence from medical causes decreased as age increased. For non-medical causes of absence the opposite was true; absence increased as age increased. Lengths of absences also varied in the different age groups. Short absences of one day or less were more numerous among older pupils of 13 years or more, while extended absences of two weeks or longer were more prevalent among younger pupils of 6-9 years.

The investigation into possible relationship between absence and certain socio-economic factors revealed significant results for school progress, economic status of the home, and home conditions. No relationship was evident between absence and size of family or absence and occupation of the father.

The findings mentioned above have been selected from the following analyses which were made for city, urban, and rural pupils in each province.

1. Average number of days lost and average number of absences per pupil.
2. Percent of all days lost due to medical causes by months and for the year.
3. Percent of all days lost due to medical causes by age and sex.
4. Number of absences and days lost for each cause as a percent of all causes and all medical or non-medical causes.
5. Percent distribution of absences according to length for all causes and certain selected causes.
6. Percent distribution of absences according to length and age for all causes, all medical causes, and all non-medical causes.

7. Rates of absence per thousand pupil days by cause for number of absences and number of days lost.
8. Rates of absence per thousand pupil days by cause and age for number of absences and number of days lost.
9. Rates of absence per thousand pupil days by cause, age, and sex for number of days lost.
10. Rates of absence per thousand pupil days by months for days lost from selected causes.
11. Average number of days lost per pupil in relation to school progress.
12. Average number of days lost per pupil in relation to economic status of the home.
13. Average number of days lost per pupil in relation to home conditions.
14. Average number of days lost per pupil in relation to number of children in the family.
15. Average number of days lost per pupil in relation to occupation of the father.
16. Average number of days lost per pupil in relation to the birthplace of father and mother.

The significance of the factual data which were gathered in the study of pupil absence led to the preparation of a condensed report specially designed for parents and teachers. This publication is Report No. 4, under the title "The Problem of School Absenteeism". As well as presenting the major findings of the main study, the condensation considered the health significance of the data. In this connection, suggestions and directives were laid down for teachers and for parents to assist in reducing that portion of school absence which may be considered preventable.

THE PHYSICAL ENVIRONMENT OF THE SCHOOL PLANT—REPORT NO. 5

In an attempt to improve the general housekeeping in schools, a handbook for caretakers has been prepared under the title, "An Aid to Better School Housekeeping". This publication is the result of an extensive investigation into various courses for school caretakers and other relative material. The handbook presents up-to-date information on surfacing and maintenance of school floors (unfinished, finished, and composition surfaces); cleaning and dusting throughout the school plant; heating and ventilation; and school lighting. In addition a furnace chart has been prepared and inserted in each handbook in order to give assistance in proper furnace attention. This chart is printed on heavy stock and may be hung near the furnace for ready reference.

HEALTH INSTRUCTION IN TEACHER-TRAINING INSTITUTIONS—REPORT NO. 6

A survey of the health instruction program in the teacher-training institutions of Canada has been made and published in mimeographed form. This survey treats separately the training programs for elementary and secondary teachers and covers such topics as certification, health instruction, student rating, health services, qualifications of instructors and courses offered for teachers-in-service. The report reveals definite variations in the time spent on certain phases of instruction, such as the study of school health problems and actual teaching methods. Lack of uniformity is also evident in the study of first-aid and in the type of student health services provided in the training centres.

THE EFFECT OF A SCHOOL MEAL PROGRAM ON PUPIL ABSENCE—REPORT No. 7

During the school years 1947-48 and 1948-49, the Canadian Red Cross Society sponsored a school meal study in three Toronto schools. This study was an assessment of the values of a scientifically prepared school lunch given to approximately 250 pupils, each of whom had a partner in the control group (i.e., not receiving the meal). The National Committee for School Health Research was asked to assume the responsibility of measuring the effects of this program upon pupil absence. Accordingly all absences were recorded for the experimental and control groups and analyzed extensively at the conclusion of the feeding period. The study showed that the meal had little effect upon absence for medical and non-medical causes.

ADDITIONAL ACTIVITIES OF THE NATIONAL COMMITTEE

In 1947 the National Committee proposed an intensive health research study in a specific community in one of the provinces. Accordingly a study was organized in the Clover Bar school division, which lies immediately south of Edmonton, Alberta. The project was under the direct supervision of a member of the National Committee, Dr. M. E. LaZerte, Dean of the Faculty of Education of the University of Alberta, and a grant-in-aid was received from the Research Council of the Canadian Education Association.

The study aimed to determine the effects in a community of a course in Constructive Medicine specially designed for teachers. Thirteen teachers who had taken the course were used as the experimental group and were paired with a similar number of teachers who had not had the course and acted as the control group. The results showed that this special course for teachers had affected favorably the school plant and playgrounds, sanitation of outdoor toilet facilities, attitudes of students, and extent of immunization in the community.

For the past few years the School of Public Health of Harvard University has conducted an experiment in nutrition and health education in the schools of Newton, a suburb of Boston, and in Hartford County, Tennessee. The National Committee for School Health Research has been successful in obtaining two fellowships from the Nutrition Foundation, Inc., in the United States, in order that two Canadians may spend a year studying this project. The fellows for the year 1950-51 are Miss R. Chittick, Faculty of Education at the University of Alberta, and Mr. V. H. Wendorf, Department of Health Education at the Danforth Technical School in Toronto. It is anticipated that additional fellowships will be available in future years.

Throughout the five-year program the National Committee has had association with numerous organizations in the field of school health. Papers have been presented to such organizations as the Canadian Council on Nutrition and the American Public Health Association, and close liaison has been maintained with the School Health Bureau of the Metropolitan Life Insurance Company in New York and the Ministry of Health in London, England. These national and international contacts have proved most valuable in the numerous projects which

have been undertaken and have stimulated considerable interest abroad in the School Health Committee's work.

THE FUTURE OF SCHOOL HEALTH RESEARCH

Had sufficient time been available, the National Committee planned to conduct studies in the following fields:

- (a) A survey of vision and its relation to school achievement.
- (b) A survey of hearing and its relation to school achievement.
- (c) Safety education in Canadian schools.
- (d) Motivation of health teaching at different grade levels.

It is hoped that some or all of these topics will be undertaken in the provinces in the near future. For the present, each Provincial Committee for School Health Research will continue to function and each has undertaken the preparation of a report on its provincial school health program. This report will result in an accurate account of the provincial program and will act as source and reference material for student teachers, teachers-in-service, public health nurses and administrators in the two departments of government. Through the work outlined above and with such interest as has been indicated in the continuance of the school health research program the National Committee for School Health Research feels that it has made a definite contribution to a greater appreciation of health problems among Canadian pupils and has suggested certain useful steps that might be taken towards their solution.

A. J. PHILLIPS, Ph.D., *Director.*

REPORT OF THE LABORATORY SECTION

THE seventeenth annual Christmas meeting of the Laboratory Section was held in Toronto, at the Royal York Hotel, on December 16 and 17, 1949. Approximately one hundred laboratory workers from across Canada were in attendance, as well as a small American representation. Thirty papers on a variety of interesting problems were presented.

The annual dinner meeting was to have been addressed by Dr. W. D. Workman, Chief of the Laboratory of Biologics Control, Microbiological Institute, National Institutes of Health, Bethesda, Maryland, but in his unavoidable absence Dr. Donald T. Fraser, Professor of Hygiene and Preventive Medicine and Associate Director of the School of Hygiene and of the Connaught Medical Research Laboratories, University of Toronto, gave a very interesting talk on his first visit to Europe and the British Isles since the last war. This talk was illustrated by still and moving pictures, including a film on the early days of the Pasteur Institute.

The officers elected for the ensuing year were: Chairman, Mr. J. Gibbard, Ottawa; Vice-chairman, Dr. R. G. E. Murray, London; Secretary, Dr. F. O. Wishart, Toronto; Council, Dr. A. L. MacNabb, Guelph; Dr. A. Frappier, Montreal; Dr. C. A. Mitchell, Ottawa; Dr. J. H. Orr, Kingston; Dr. R. J. Gibbons, Ottawa; and Dr. E. L. Barton, Toronto.

It was decided to hold the 1950 meeting in Ottawa.

Committee Reports

(a) Committee on Standard Methods for the Examination of Water and Sewage

Mr. Norman J. Howard presented the report which explained the mechanics of the revision of "Standard Methods" for the tenth edition of this publication, the organizations and committees concerned and the liaison of our committee with the project. Since Mr. M. H. McCrady, chairman of our committee, is actively concerned with this endeavour through the American Public Health Association, it can be confidently expected that Canadian opinion and interests will be well represented.

(b) Committee on Chemical Water Standards

A comprehensive report on this subject was presented by Mr. David Wolochow, Secretary of the Canadian Committee on Chemical Water Standards. The history, achievements, and suggestions for future action were fully covered.

After some discussion from the floor, adoption of the report, moved by Mr. Wolochow and seconded by Dr. E. G. D. Murray, was approved by the meeting with the recommendation that the Executive Council of the Canadian Public Health Association be notified of this action by the Laboratory Section and that it be urged to recommend the formation of a new committee under the aegis of the Department of Mines and Resources and the Department of National Health and Welfare. This committee was to be composed of representatives of the Chemical Institute of Canada, the Canadian Public Health Association, and industrial and other groups concerned in addition to the sponsoring groups. It was further suggested that a survey of Canadian waters, particularly in regard to pollution hazards, be a main endeavour and that this committee should work closely with the International Joint Commission on Boundary Waters.

Canadian Microbiological Council

The deliberations of the Executive of the Laboratory Section on this subject since the last meeting were reported by the Secretary. Various members reviewed the previous attempts, difficulties met, and the need for such a body. Finally it was moved by Dr. M. H. Brown and seconded by Dr. E. G. D. Murray that the Executive carry on negotiations with other groups with a view to forming a Canadian Microbiology Council. The motion was passed unanimously.

Laboratory Needs in Canada

Dr. Harold Ansley, of the Department of National Health and Welfare, introduced this topic in relation to the larger subject of health insurance and pointed out that the introduction of health insurance would throw a great strain on existing laboratory facilities of all kinds—public, semi-public, private, and commercial. Subjects requiring study were available laboratory facilities of all kinds and their quality, financial backing, administration, standards, and training of personnel. The incoming executive was authorized to make a survey of laboratory facilities and requirements in Canada and for this purpose a committee was to be appointed to carry on immediately.

F. O. WISHART, M.A., M.D., D.P.H., *Secretary.*

REPORT OF THE CANADIAN COMMITTEE ON CHEMICAL WATER STANDARDS

(Canadian Public Health Association and Chemical
Institute of Canada)

REPLIES to a questionnaire regarding water supplies, sent out in 1932 by the National Research Council to Canadian cities and towns, reported water analyses in so many different ways that it was not possible to tabulate the results. This situation was studied further by Mr. H. A. Leverin of the Bureau of Mines, Mines and Resources Department, and a paper he presented at the Canadian Chemical Convention in 1932 led to the formation of a Committee on Water Analysis jointly by the Canadian Institute of Chemistry* and the Canadian Public Health Association in 1935, under the chairmanship of the late Mr. E. T. Sterne. About a year later Mr. A. R. Bonham became chairman and Mr. A. F. Gill of the National Research Council was named secretary, and the Committee agreed to undertake work on three problems:

1. Standardization of Methods of Water Analysis.
2. Standardization of Methods of Reporting Water Analysis.
3. Classification of Canadian Fresh Waters.

Upon the appointment of a member of the Committee to the Joint Editorial Board of the American Public Health Association and the American Water Works Association and submission to the sponsoring bodies of a tentative scheme for reporting analyses, the Committee recommended in December, 1937:

1. That the Standard Methods for Examination of Water and Sewage of the A.P.H.A. and A.W.W.A. be declared official for each of the sponsoring bodies, and that the official method of reporting results of analysis be in parts per million, using the ionic basis.

2. That consideration be given to the possibility of carrying out experimental work on a number of designated topics in the field of water and sewage analysis, interpretation of results, classification of waters, coagulation and corrosion.

3. That a new Canadian Committee on Chemical Water Standards be formed under the chairmanship of the Canadian representative on the Joint Editorial Board of the American Public Health Association and the American Water Works Association to direct the proposed work.

The sponsors took action on the Committee status in 1939 and the Canadian Committee on Chemical Water Standards was formed under the chairmanship of Mr. Leverin. Subsequently, the Canadian Public Health Association published the Committee's recommendations regarding standard methods of water analysis, but the Chemical Institute of Canada, while offering to encourage and publicize the Committee's work, felt that the establishment of standards was more properly the function of the National Research Council.

In 1940, the Committee recommended that the preparation of a standard report form be referred to the National Research Council for consideration, it being intended that this matter be dealt with by the Subcommittee on Specifi-

*Now the Chemical Institute of Canada.

cations for Chemicals of the Canadian Government Purchasing Standards Committee.* Presumably because of the war, no action was taken.

Since that time the Canadian Committee on Chemical Water Standards has sponsored work on test methods and has met about once a year to consider problems in its field and review the progress being made. In 1944, Mr. Leverin retired from public service and was succeeded in the chairmanship by Mr. A. V. DeLaporte, Ontario Department of Health. In the interval, close contact has been established with the American Society for Testing Materials Committee D-19 on Industrial Waters.

At its 18th meeting last May the Committee recommended that the sponsoring organizations review its status and consider two alternative actions:

1. Disband the Committee, *or*
2. Reorganize the Committee on a broader basis to include representatives from associations and organizations in various fields of industry interested in the properties, uses, analysis of and standards for water and related subjects.

In the letter transmitting this recommendation it was explained that the Committee felt that the purpose for which it had been originally appointed had been served, and the Committee as presently constituted had completed its assignment. It was also felt that the problems being created by the growing importance of water as a raw material of industry and by the treatment and disposal of sewage and industrial wastes were too great to be adequately dealt with by the Committee as presently constituted and supported.

Subsequently, the subject has been discussed with officers of the Mines and Resources Department, the Mineral Resources Division of which has continued the program of work begun by Mr. Leverin, formerly of that Department, and has expanded it in some directions. This has included the investigation of industrial waters in Canada, in cooperation with other branches of the Department such as the Geological Survey, Geographical Bureau, Hydrographic Services, and Water and Power Bureau. For the present the studies are of British Columbia, Quebec and Ontario waters, but it is planned to extend them as soon as possible to the three prairie provinces and later to the Maritimes. Some investigations are also being carried out on behalf of the Fraser River Dominion-Provincial Board, and in connection with the studies of the International Joint Commission on the Columbia River watershed.

For the future, the Department plans to coordinate activities in this field by bringing together the interested Federal and Provincial agencies, industrial organizations, and universities.

It is, therefore, now recommended to the Canadian Public Health Association and the Chemical Institute of Canada:

1. That the present Canadian Committee on Chemical Water Standards be disbanded.
2. That they request the Mines and Resources Department to organize a suitable national committee to undertake a survey of activities in the field of water and sewage in Canada, to coordinate these activities, and to foster research in this field.

*Now the Canadian Government Specifications Board.

It is further suggested that the proposed new National Committee might refer any problems on specifications which may arise to the Committee on Specifications for Chemicals of the Canadian Government Specifications Board. This Committee has recently been reorganized and a Subcommittee on Specifications for Water Purification and Softening Materials has been appointed.

A. V. DELAPORTE, *Chairman.*

DAVID WOLOCHOW, *Secretary.*

Letter to the Editor

THE DRINKING FOUNTAIN AND POSSIBLE DISEASE HAZARDS

Sir:

For some little time I have been examining literature for factual data concerning the relationship of the drinking fountain and possible disease hazards. As you may know, specific references to this relationship are meagre and even when discussed, the information is rarely conclusive.

I would like to have your help in establishing the status of our present knowledge about drinking fountains as possible aids to disease transmission. For example, two incidents which appear to offer some basis for believing that drinking fountains may offer real as well as potential means of disease transmission are summarized below.

In one instance, a health officer noticed that his daughter had developed a ringworm infection on the right cheek. Investigations showed other children in two school classrooms with ringworm infections also on the right cheek. These were located at about the point where a drinking fountain protective guard would touch the cheek. Cultures of swab samples from the shield failed to demonstrate any specific pathogenic organisms, but circumstantial evidence seemed to implicate a drinking fountain used by the students in these two classrooms.

In another instance, 14 cases of amoebic dysentery were reported in a hospital for the insane. Cross-connections were found to exist on two drinking fountains and further it was discovered that the patients were using the drinking fountains for other purposes, including the washing of undergarments. It was also shown by testing

that dyes placed in the basin of one fountain reappeared in water drawn from the water inlet. Although no recovery of organisms was demonstrated, circumstances did implicate the drinking fountain as a possible link in the transmission of amoebic dysentery in the hospital.

It is entirely possible that there are in the experience of your readers certain observations or investigations of situations similar to those above which would either substantiate or refute the thesis that drinking fountains are actual as well as potential health hazards.

I am interested in obtaining information on all such situations. When I have received reports from your readers and others in different parts of the United States and Canada, I will attempt to put the data together in the form of a critical review and summary. Conclusions may suggest additional investigations of drinking fountain sanitation, including bacteriological studies and possible modification of design standards.

In order that the replies may have some degree of uniformity, I am enclosing a sample outline which might be followed for purposes of recording the information.

May I count on your cooperation to obtain as many facts as possible?

Sincerely yours,

*William T. Ingram, Associate
Professor of Public Health Engi-
neering, College of Engineering,
New York University, University
Heights, New York 53, N.Y.*

REPORT

DISEASE INCIDENCE INVOLVING DRINKING FOUNTAINS

1. Date of this report.....
2. Name of agency or person submitting report.....
.....
3. Date of incident here reported.....
(State exact dates if known; otherwise give nearest month or year associated with the observation.)
4. The following information is based on:

 Personal knowledge of undersigned.....

 Personal observations of official staff members.....

 Official departmental investigation.....

 Information received from sources outside department.....
(Check any of the above which apply.)
5. The information is supported by laboratory data.....

 field tests.....

 other records.....
(Describe character of data on record.)
6. Has any report of the above-mentioned incident been published? If so, where? (Give complete reference if possible.)
7. Describe incident: (include any information available concerning specific disease(s) involved; number of cases; type(s) of drinking fountain involved; epidemiological conclusions or implications; pertinent evidence pointing to inclusion of drinking fountain(s) as possible instrument(s) of disease transmission; Province, City or County; type of building use with specific name of premises if possible).

Submitted by:

.....

NEWS

British Columbia

DR. H. K. KENNEDY, who received the Diploma in Public Health from the University of Toronto this year, has been appointed director of the North Okanagan Health Unit at Vernon.

DR. J. L. GAYTON, formerly with the Provincial Department of Health and now medical health officer for the City of Victoria, has been awarded a specialist's certificate by the American Board of Preventive Medicine and Public Health, Inc., after taking the examination which was held in Portland, Oregon, May 28th and 29th.

THE SOUTH OKANAGAN Health Unit, which at present takes in school districts 23, 77, 15 and 14, has been expanded to include school districts 16 and 17, thus including Princeton and Keremeos in the health unit.

DR. CHANG HOEY CHAN, a Canadian—Unesco Fellow in Public Health from Malaya, visited the Provincial Department of Health and Welfare during June. Dr. Chang has been attending the University of Toronto. While in Victoria he discussed public health problems and methods of public health administration with members of the senior staff of the department.

Saskatchewan

DR. A. E. CHEGWIN recently resumed his duties as director of the Dental Health Division of the Provincial Department of Public Health after having completed successfully at the University of Toronto the course leading to a Diploma in Dental Public Health. Before returning to Saskatchewan, Dr. Chegwin attended the annual meeting of the Canadian Public Health Association in Toronto and was elected vice-chairman of the newly organized Dental Public Health Section of that body.

WILLIAM A. RIDDELL, B.A., M.Sc., Ph.D., resigned his post as director of the Provincial Laboratory on June 30 to accept a university appointment as dean of Regina College. Dr. Riddell entered the government service in October, 1938, as provincial analyst for the

Department of Public Health and was promoted to his recent position in December, 1942.

TO IMPLEMENT THE PROVISION through the Federal Health Grants of 79 incubators to Saskatchewan, the Child Health Division has recently employed a child health nurse, Mrs. Dorothy Hales of Regina. In addition, the services of Miss Ruby Tinkiss, consultant in maternal and child health for the Department of National Health and Welfare, have been loaned to the province for several months. The utilization of infant incubators is being studied and a specialized program for the care of premature babies planned. In connection with this program, a series of lectures on general nursing care and prenatal education will be given in nursing schools and other hospitals throughout the province.

MISS MARY BRETT, daughter of Dr. A. J. Brett of Regina, Secretary of the Dental Council of Canada, is the first dental hygienist to be registered in Canada. The legislation governing the practice of registered dental hygienists, which went into effect in Saskatchewan on April 1st of this year, constitutes a landmark in Canadian dental history.

Manitoba

A PROGRAM to control flies and mosquitoes as a post-flood measure has been undertaken by the Department of Health and Public Welfare on Federal Health Grant moneys amounting to \$29,500. The control program was instituted where infestation was liable to be greatest and where the population accentuated the nuisance and possible health hazard. Fogging operations are covering Greater Winnipeg, the City of St. Boniface and the six centres in rural Manitoba that were hardest hit by the flood. John McLintock of the Livestock Insect Laboratory, Science Service, Federal Department of Agriculture at Lethbridge, helped organize the campaign. Two specially equipped R.C.A.F. Dakotas with their crews were loaned to the Department for five days to spray river and treed areas encircling Greater Winnipeg. Supervising this first operation

were Dr. C. R. Twinn, Chief of the Division of Household and Medical Entomology, Federal Department of Agriculture, and Dr. A. W. A. Brown, of the University of Western Ontario, London. Fogging operations in Greater Winnipeg are being carried out on behalf of the Department of Health and Public Welfare by the Greater Winnipeg Anti-Mosquito Campaign which has been active for some years. A light commercial plane has been used to spray river banks and suburbs of Greater Winnipeg. D. G. Peterson and D. C. Watson, of the Division of Household and Medical Entomology, are assisting with the rural phase of the program.

A. R. NICOL, an engineering student at the University of Manitoba, is working this summer in the Division of Environmental Sanitation on the school research project, and D. Hendin, a post-graduate chemistry student, is working in the laboratory on the study of nitrates in ground waters.

T. LACKIE, who graduated in engineering this year from the University of Manitoba, is now assisting L. A. Kay, Public Health Engineer.

VIRDEN HOSPITAL DISTRICT Number 10 was formed in June after the plan was approved with a three-fifths majority at the polls. A new 30-bed hospital will be built in the town of Virden. Medical nursing units will be built in the villages of Reston and Elkhorn. A nursing unit is planned for the town of Oak Lake. The district will serve 10,481 residents in an area of 13,000 square miles. The total cost of the four new buildings complete with equipment will be \$310,000.00. The district will receive \$118,000.00 under the Federal-Provincial Hospital Grant and from the Manitoba Pool Elevators. The remaining cost will be met through municipal taxation.

DR. J. A. EADIE has been appointed medical director of the Portage la Prairie Health Unit. Dr. Eadie graduated in 1944 from Edinburgh University and interned at the Cumberland Infirmary at Carlisle, England, near his home town, Brigham in Cumberland County. He served for several years with the R.A.M.C. in the Far East and following his discharge studied for his degree in public health at Edinburgh University. He served on the staff of the Royal Hospital for Sick Children in Edinburgh and later at the City Fever Hospital before coming to Manitoba.

DR. MAXWELL BOWMAN, Provincial Epi-

demologist, has been accepted as a member of the Founders Group under the American Board of Preventive Medicine and Public Health.

FOUR NEW HOSPITALS were opened during the month of June in Manitoba. A Red Cross Out-Post Hospital, the second in the Province, was officially opened June 15th at Fisher Branch. The building serving McCreary Medical Nursing Unit District was opened June 22nd and the one serving the Erickson Medical Nursing Unit District opened June 23rd. Both medical nursing units have six beds, four bassinets, a case room, an emergency operating room and offices for a doctor. The 30-bed Killarney and District General Hospital was officially opened June 30th. This building serves the Killarney Hospital District Number 15.

A LARGE EXHIBIT on the theme "Better School Lunches" was prepared in the Bureau of Health and Welfare Education for showing at summer fairs throughout Manitoba. The Provincial Nutritionist, Miss Carolyn Midforth, will be attending the fairs to answer inquiries.

Ontario

DR. WILLIAM PROWSE, R.C.A.F., and Dr. Fred McHattie, R.C.N., recently paid visits to the Division of Industrial Hygiene, Ontario Department of Health. In addition to observing the activities of the Division, they spent some time in local industrial plants where well-established health services are in operation. Mr. Duncan Henderson of the Industrial Health Division, Department of National Health and Welfare, Ottawa, paid a short visit to the Division.

MR. NORMAN L. KELLY has joined the staff of the Division of Industrial Hygiene, Ontario Department of Health. Since graduating in chemical engineering from the University of Toronto in 1948, Mr. Kelly has been on the staff in the Chemical Engineering Department of the University and has been engaged in post-graduate study. He received his M.A.Sc. in June of this year.

DR. ROGER G. KNIFE has been appointed director of the Elgin-St. Thomas Health Unit, succeeding Dr. R. A. Kennedy, who has resigned. Dr. Donald C. Smith, formerly assistant medical officer of the East York-Leaside Health Unit, has replaced Dr. Knife as director of the Lambton County Health Unit.

MISS HELEN G. MCARTHUR, Director of Nursing Services for the Canadian Red Cross Society, was elected president of the Canadian Nurses Association at its annual meeting in Vancouver last month.

Quebec

DURING THE PAST three months sixteen nurses have been appointed to the different county health units of the Ministry of Health. Three public health nurses have left the service. Five sanitary inspectors have been added to the staffs of the units.

DR. J. M. ANDRÉ MASQUIN has been named medical health officer of the Gaspé County Health Unit, Dr. Jean-Marie Tremblay, medical health officer of the Témiscouata County Health Unit, and Dr. Marcel Cantin medical health officer of the Labelle Health Unit.

MR. THÉO. J. LAFRENIÈRE, C.E., S.C., engineer-in-chief of the Ministry of Health, was elected vice-president of the Canadian Public Health Association at the June meeting in Toronto.

TO HELP IMPROVE treatment services for mentally defective children in Quebec, the federal government has provided more than \$122,800 from its health grants for the Mont-Providence Institut Médico-Pédagogique at Rivière des Prairies, near Montreal. This organization now has more than 1,200 beds for the care of mentally defective children. The federal grant meets the full-time salaries of a psychiatrist and a psychologist, two social workers, six nurses, and thirty teachers with specialized training. In addition, twelve staff members, some of whom will assist in occupational therapy, will be engaged.

Maritimes

IN NOVA SCOTIA, bursaries have been awarded to Dr. I. M. MacLeod, Dr. Clarence Goss, and Dr. E. L. Eagles. The first will spend a year at the University of Toronto studying radiology, and Doctors Gosse and

Eagles will take short refresher courses in the treatment of venereal diseases at clinics in New York, Washington and Baltimore. Dr. Gosse is director of the V.D. clinic of the Victoria General Hospital, Halifax, and Dr. Eagles is a divisional medical health officer.

IN NEW BRUNSWICK funds have been set aside for Roger C. Roy and Dr. Ora R. Smith, both of Moncton. The former is studying psychiatric social work at the Boston College School of Social Work, and the latter will take a two-year course in psychiatry at Dalhousie University and the Victoria General Hospital, Halifax.

Newfoundland

WITH THE OPENING of a new 118-bed section of the St. John's Tuberculosis Sanatorium, an enlarged staff will be required, and federal funds have been allotted to meet the salaries of a senior physician, a house physician, an occupational therapist, a laboratory assistant, 15 ward assistants, 4 orderlies, a cook, an assistant dietitian, 10 maids and 7 other persons required to staff the new wing.

A GRANT HAS BEEN approved to provide part of the salary for a doctor to be stationed at Carmanville, one of a number of isolated settlements on Notre Dame Bay. At present the nearest medical service is at Twillingate, but only emergency cases are taken there because of difficulties of travel. The medical officer at Carmanville will serve the communities within a radius of 20 to 25 miles.

TO STUDY IMPROVED physiotherapy procedures for treating crippled children at the Orthopaedic Hospital, St. John's, Miss Mary Tuck will spend several weeks at Sunnybrook Hospital, Toronto, and Blythedale Orthopaedic Hospital, Valhalla, N.Y. Two nurses, Misses Glenna Rowsell and Audrey Yates, both from St. John's, have been granted bursaries for a year's study at the University of Toronto's School of Nursing. Miss Rowsell will specialize in orthopaedic nursing and Miss Yates in paediatric nursing.

EMPLOYMENT SERVICE

Advertisements regarding "positions available" and "personnel available" will be published in from one to four consecutive issues, depending upon the requirements of the agency or person concerned. They are limited to seventy words or less, with a confidential box number if desired. There is no charge for this service to members of the Association. Health agencies are charged a flat rate of \$10.00 for the advertisements (up to four consecutive issues) and for the service. The rate for non-members is \$5.00. The service includes confidential clearing of information between prospective employer and employee if desired.

Public Health Nurses: Applications are invited from qualified Public Health Nurses. Generalized program, minimum salary \$1900. with annual increments according to experience, liberal car allowance, good personnel policies. Apply to Dr. R. S. Peat, Medical Officer of Health, Stormont, Dundas and Glengarry Health Unit, 104 Second Street West, Cornwall, Ontario.

Wanted: Public Health Nurse for the City of Owen Sound. Salary \$2000. to \$2400. according to experience, plus car allowance. Apply to M. S. Leslie, City Hall, Owen Sound, Ontario.

The University of Alberta invites applications for the position of Professor of Preventive Medicine. Duties to start September 1, 1950. Details may be obtained from the Dean of the Medical Faculty, University of Alberta, Edmonton, Canada.

Applications are invited for the position of Senior Public Health Nurse for the City of Stratford. They should be addressed to City Clerk L. R. Graham, Stratford, Ontario.

Available: Sanitary Inspector. Qualified sanitary inspector, aged 30, seeks post in Canada, preferably with a County Health Unit in Southern Ontario. Holds certificates as Sanitary Inspector, Inspector of Meats and Other Foods, and Diploma in Hygiene (Honours). Wide experience in all phases of work, both urban and rural. Qualifications and experience approved by Canadian Public Health Association. Air Mail for further details to John Wilford, 5 Neame's Forstal, Selling, Faversham, Kent, England.

Sanitary Inspector: Applications are invited from qualified sanitary inspectors for appointment of junior sanitary inspector. Salary based on experience. Cumulative sick leave. Liberal car allowance. Apply to Dr. D. G. H. MacDonald, Peel County Health Unit, Court House, Brampton, Ontario.

Public Health Nurses: Applications are invited from qualified public health nurses for a generalized program. Minimum salary \$1900.00 with allowance for experience with annual increments on merit. Cumulative sick leave. Liberal car allowance. Apply to Dr. D. G. H. MacDonald, Peel County Health Unit, Court House, Brampton, Ontario.

